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RIFLE SQUAD AND PLATOON
EVALUATION PROGRAM
22 MAY 61 - 31 JULY 61

ANNEXES A-1

ANNEXES

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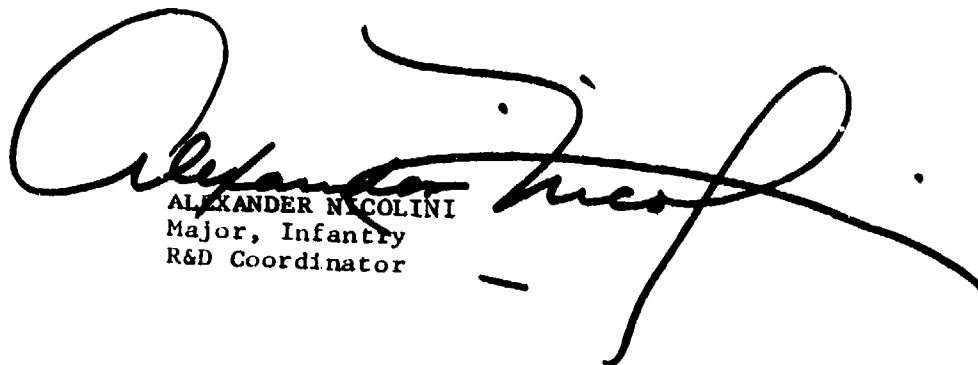
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ALEXANDER NICOLINI
Major, Infantry
R&D Coordinator

HEADQUARTERS UNITED STATES ARMY INFANTRY SCHOOL
Fort Benning, Georgia

AJIIS-J

13 November 1961

Contained herein is a complete report on the USAIS Rifle Squad and Platoon Evaluation Program. Subject material in its present form has been forwarded to US Army CONARC for review and appropriate action.

Opinions, recommendations, and allied data set forth reflect a USAIS position only and are not to be construed as having approval of US Army CONARC or Department of the Army.



A. D. SURLES, JR.
Brigadier General, USA
Assistant Commandant

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FINAL REPORT, USAIS, RIFLE SQUAD AND PLATOON EVALUATION PROGRAM
(22 MAY 61 - 31 JULY 61)

1. REFERENCES:

- a. Personal letter from the Commandant, USAIS, to the Commanding General, USCONARC, dated 28 April 1961.
- b. Personal letter from the Commandant, USAIS, to the Deputy Chief of Staff, Operations, Plans and Training, USCONARC, dated 3 July 1961.

2. PURPOSE OF TEST:

a. In reference 1a, the Commandant, USAIS, expressed concern over problems resulting from the introduction of certain new weapons into current organizations; specifically mentioned were:

(1) The loss of the multishot capability of the M79 grenade launcher justified the need to examine whether the decision to place two of these weapons in each rifle squad remained a valid one.

(2) The demonstrated inaccuracies of the M14 rifle (modified) and its inability to maintain a high rate of fire made it a doubtful substitute for the BAR in satisfying the automatic fire requirements of the Rifle Squad.

(3) Substitution of the M60 machinegun for the M14 (modified) rifle in the Rifle Squad should not be accomplished without careful consideration of the tactical and logistical implications involved.)

b. The Commandant, USAIS, directed that tactical field testing be conducted at Fort Benning to determine an optimum Rifle Squad and Platoon which provides the best balance of personnel, weapons, equipment, and tactics for the present time frame.

3. TEST OBJECTIVES: To equate and examine various squad and platoon organizations to determine the most effective balance of personnel, weapons, equipment and tactics, to include:

- a. Advisability of placing the M60 MG in the squad in the AR or MG role.
- b. Assignment and number of M79 grenade launchers.
- c. Determining the validity of the fire team concept (Balanced Teams as in Battle Drill).
- d. Personnel load and logistical implications.
- e. Assessing squad mobility, firepower, maneuverability, and staying power.
- f. Role of the weapons squad.
- g. Determining optimum span of control for the squad leader.

4. CONCEPT OF TEST: The evaluation consisted of a series of offensive and defensive exercises performed by various combinations of squad and platoon organizations utilizing both live and blank ammunition. Emphasis was placed on evaluation of firepower, mobility, logistical, and tactical capabilities of each of the candidate organizations.

5. **EVALUATION PERSONNEL:** The Commandant, USAIS, directed that the evaluators be carefully selected so as to represent the best qualified officers and NCO's available at the Infantry School. Five (5) officers and eighteen (18) senior noncommissioned officers were so designated, representing all instructional departments of the School.

6. **WEAPONS, AMMUNITION AND EQUIPMENT:**

a. **Weapons.** To insure validity of the live firing phases of the test and provide comparative weapons data, every effort was made to obtain the required weapons. In this regard procurement progressed as follows:

(1) Twelve (12) M79 grenade launchers were procured by G3, CONARC, for use during the test.

(2) Three (3) M72 (LAWs) were made available to USAIS by US Army Infantry Board for use in firing against moving tanks in the defensive portions of the test.

(3) Twelve (12) M14 rifles (modified) with bipods and hinged butt plates were secured from Springfield Arsenal.

(4) Sufficient quantities of M60 MGs and M14 rifles were available at USAIS.

b. **Ammunition.**

(1) Five hundred (500) rounds of M79 ammunition were procured by G3, CONARC, for use during the live firing phases.

(2) Twenty thousand (20,000) rounds of caliber 7.62 blank ammunition were made available to USAIS by US Army Infantry Board.

c. **Equipment.**

(1) Sufficient blank adapters and breech shields were fabricated by USAIC, Ordnance Office, for use on the M14 rifle and M60 MGs.

(2) Replicas of the M79 and the M67 were produced to scale and weight by USAIS Training Aids facilities for use during the blank firing phases.

(3) An economical means of coloring the ogives of ball ammunition, thus enabling the gathering of comparative weapons' data, was provided by US Army Infantry Human Research Unit.

7. **PRE-TEST PREPARATIONS:**

a. **Liaison.**

(1) CDEC's Outline Plan of Test for the Optimum Composition of the Rifle Squad and Platoon, 1965-1970, was carefully examined. The USAIS Liaison Officer at CDEC visited Fort Benning and briefed the USAIS Test Director on the progress made at that installation. While it was recognized that the CDEC project was a good one, the time frame with which it was dealing, plus the fact that live fire and the latest available weapons were not utilized, precluded the obtaining of solutions to the immediate problems outlined in paragraph 2a, above.

(2) USAIS Deputy Test Director visited 2d Marine Division, Camp Lejeune, North Carolina, where he was briefed on the Combat Unit Evaluation Phase, Fleet Marine Test Program.

(3) Pre-test liaison with the US Army Infantry Human Research Unit (USAIHRU) proved invaluable during the planning stages. Configurations of the eight (8) candidate squads (Annex I) together with the Evaluator's Analysis Guide were coordinated with USAIHRU prior to commencement of the Test. This agency also designed an efficient device for the rapid loading of M14 magazines which aided greatly in the performance of this task.

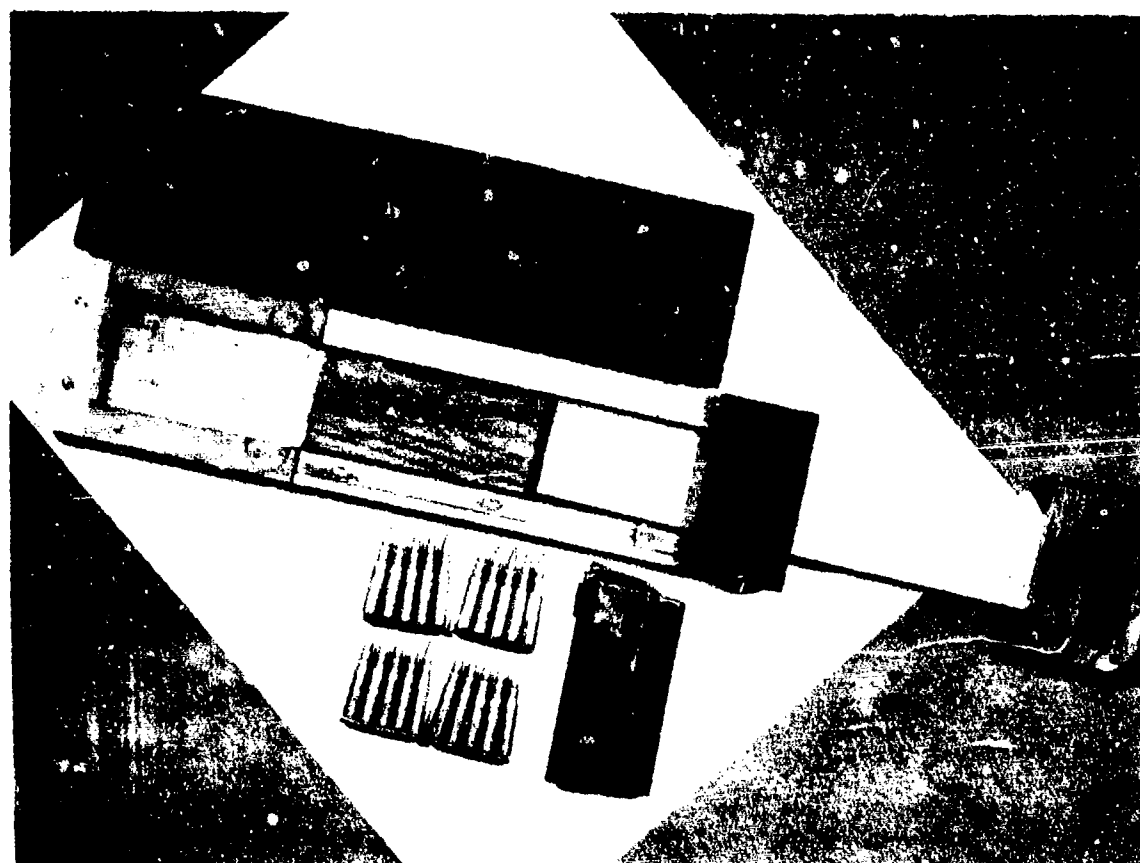


Figure 1. M-14 Loading Device (Empty)

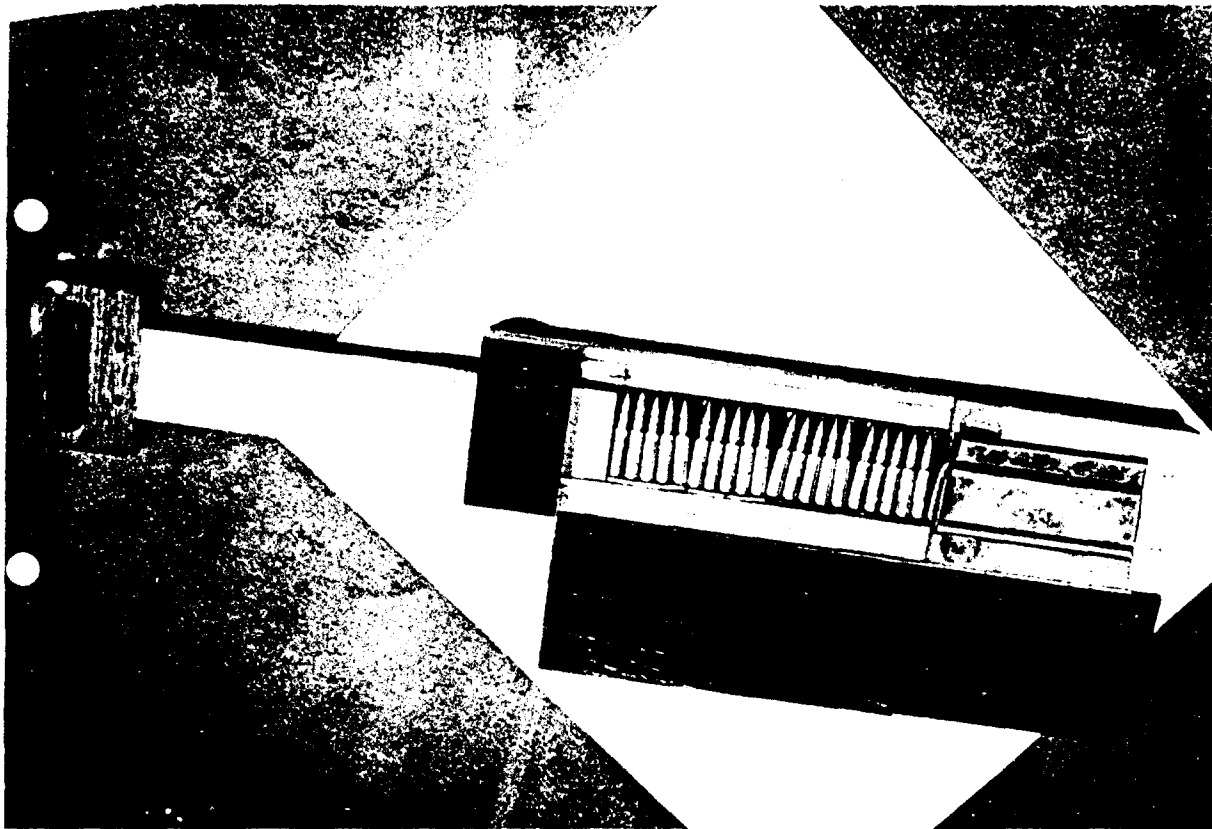


Figure 2. M-14 Loading Device (Operative)

b. Training. All test troops received forty-seven (47) hours of tactical training. Individual weapons training was conducted for those soldiers armed with the M60 MG, M14 rifle (modified), and M79 grenade launcher.

8. SQUAD TEST PHASE:

a. Test Ranges.

(1) Blank firing.

(a) Each of the eight (8) candidate squads was evaluated in a single continuous tactical exercise utilizing live aggressor play throughout. Each exercise consisted of an Advance to Contact, Attack, and Defensive phase.

(b) During this phase the squad members wore the armored vest, carried full combat loads as prescribed by TOE 7-17D, and were subjected to tactical, logistical, and medical evaluation.

(2) Live firing. This exercise was conducted on different terrain in much the same manner as the blank fire course with the principal exception being the use of live ammunition during the Attack and Defensive phases. Electrically controlled targets were utilized in both of the aforementioned phases.

b. General.

(1) The Evaluation Section made extensive observations during the conduct of the test, recorded data collected, and immediately formalized all observations.

(2) The caliber of leadership was considered throughout the squad evaluation. Continual emphasis was made to determine whether an observed deficiency existed because of poor leadership (or judgment) on the part of the leaders, or if it was one due solely to the squad organization. No candidate squad was ruled out for errors in judgment alone.

c. Tentative Conclusions - Squad Phase. At the completion of the squad phase, certain tentative conclusions were formulated. These are contained in Annex G.

9. PRE-PLATOON TEST PREPARATIONS:

a. Platoon Organization.

(1) In recognition of the individual squad strengths and weaknesses noted during the squad testing (Annex H), two (2) new rifle squads were designed for the platoon phase. Based on the organization of these squads, two (2) weapons squads were composed to complement their respective rifle squads. Detailed organization of the two (2) test platoons is contained in Annex I.

(2) Platoon "A" was essentially a modified ROAD platoon with team leaders in each of the rifle squads and no automatic weapons. Platoon "B" was patterned around the introduction of the M60 MG into the rifle squad as a machinegun and not as an automatic rifle. It had a squad leader and assistant squad leader in an unbalanced or support-maneuver configuration.

b. Platoon Test Ranges.

(1) Blank firing. Each of the candidate platoons was evaluated in a series of single continuous exercises consisting of an Advance to Contact, Attack, Defense, and Night Withdrawal phase.

(2) Live firing. This exercise, conducted on different terrain, consisted of an Advance to Contact, Attack, Defense, Daylight Withdrawal, and Patrolling phase.

c. The Soldier's Load.

(1) Early in the squad test it was recognized that the individual Soldier was greatly overburdened by his assigned weapons, ammunition, and equipment. M60 machinegunners were carrying total loads of 77.23 pounds, M14 (Mod) gunners 60.80 pounds and riflemen 50.70 pounds. The combat type operational requirements of the test itself highlighted the fact that the Soldier could not march and fight with the burden bestowed upon him. In recognition of this factor, action was taken to reduce the load of the test troops.

(2) Prior to the live firing phase of the squad test, the armored vest (8 pounds) was made an item of equipment to be used "as needed." When this initial reduction produced efficient results, the individual loads were further modified as indicated in Annex D, par 24, "The Soldier's Load."

10. MODIFICATION OF TEST PLATOONS:

a. Between the blank and live fire phases certain modifications were made to both test platoons.

(1) The M67 90mm Recoilless Rifle and its 3-man crew were deleted from both organizations for the reasons indicated in Annex F.

(2) The automatic fire selector was installed on each M14 rifle.

(3) The "as needed" equipment principle (Annex D, par 25) was expanded to include the platoon's wire and telephones. These items were not carried in the attack but were delivered during the defensive phase.

b. Platoon "A."

(1) One complete 3-man M60 MG crew was added to replace the RR team. This addition increased the unit's tactical versatility and long-range effective automatic fire capability.

(2) The M79 was substituted for the pistol on each assigned/gunner in the weapons squad. This provided the squad with three (3) alternate weapons to augment the MG fires.

c. Platoon "B."

(1) Three (3) M79 grenadiers were substituted for the 3-man RR crew. Each grenadier was also assigned a pistol.

(2) The above substitution provided the platoon leader with three (3) additional weapons to attach to the rifle squads or retain under platoon control.

11. DISCUSSION - (PLATOON PHASE):

a. The rifle squads in Platoon "A" were determined to be suitable with one exception. They favorably met all considerations for the selection of an optimum squad (See Annex H, Sec II).

b. The exception pertained to the squad's leaders. There should be one leader and he should have two (2) assistants. One should be a sergeant (E-5) and the other a corporal (E-4). Annex C, "Grade Structure, USAIS Platoon," Annex D, Sec III and VII, "Validity of the Fire Team Concept," and "Span of Control," discuss this point in further detail.

12. CONCLUSIONS-(PLATOON PHASE):

a. Rifle Squad.

(1) The size of the rifle squad should be ten (10) men, augmented to eleven (11) when the APC is introduced into the squad. This same augmentation should apply for the weapons squad. (Annex H, Sec II.)

(2) The current M60 MG should not be organic to the rifle squad in the AR or the MG role. Annex D, Sec I and VIII discusses this point in detail.

(3) The number and assignment of M79s in the rifle squad should be confirmed at two (2), assigned to personnel other than the leaders, (Annex D, Sec II). So great is this weapon's potentiality and versatility that additional M79s should be included for the weapons squad (Annex A).

(4) The M14 (Mod) rifle is not a suitable replacement for the BAR (Annex E).

(5) To take full advantage of the responsiveness of the selector on the M14 rifle, it should be installed on all weapons and its use rigidly controlled through the chain of command.

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(6) The fire team concept is valid but should not be interpreted as always requiring balanced groups of individuals or weapons to insure proper employment of same. See Annex D, Sec III.

b. Rifle Platoon.

(1) The present platoon configuration should be confirmed at three (3) rifle squads and one (1) weapons squad. There should be a four- (4) man platoon headquarters.

(2) The M67 90mm Recoilless Rifle should not be organic to the rifle platoon. (Annex F, Sec I.)

(3) All squads should habitually be supplied with the LAW, in quantities based on their tactical mission. An After Action Report on this weapon is contained in Annex F, Sec II.

(4) Wire and associated communication equipment should be retained at company level, carried on company transport, and issued to the platoons on an "as needed" basis in accordance with their tactical mission.

(5) A need exists for more adequate radio communication within the rifle platoon (par 3rd thru 41, Annex D). The radio used in the platoon command net must be dependable, lightweight, and worn rather than carried.

c. USAIS Platoon.

(1) After a thorough analysis of all applicable aspects, an optimum rifle platoon organization was composed (Annex A). The relationship of this organization to the various test objectives is discussed in detail in Annex D. This organization meets the needs of the dismounted, mechanized, or airborne rifle platoon.

(2) The weapons squad should consist of thirteen (13) men, commanded by a squad leader. The remaining twelve (12) men should be formed into three (3) equal teams of four (4) men each. Each team should be called a "Support Team," organized into two (2) elements--an M60 machinegun element and a grenadier element. Each support team should be commanded by a "Gun Sergeant" (E-5). Annex D, Sec VI, "Role of the Weapons Squad," discusses this point in further detail.

(3) The proposed USAIS platoon is in keeping with the grade structures of both our present rifle platoon and the ROAD organization. See Annex C.

d. General Conclusions.

(1) The method used in reducing the Soldier's load proved highly successful. The "as needed" principle should be expanded. (Annex D, Sec IV.)

(2) To assist in reducing the logistical implications of the "as needed" principle on higher headquarters, a suitable platoon vehicle should be provided the dismounted and airborne rifle platoons. The operator should be the platoon messenger.

(3) During the conduct of the test the Commandant directed that one additional test objective be added: To determine whether there is a requirement for organic automatic fire in the rifle squad. (Annex D, Sec VIII.) After careful evaluation of this question it was concluded that:

~~SECRET~~

(a) The absence of a suitable rifle squad automatic fire weapon precluded a complete evaluation of this question, i.e., neither the M60 MG or the M14 (Mod) rifle proved satisfactory when utilized in the AR role.

(b) When a rifle squad operates independently, there is a requirement for long-range, accurate, sustained automatic fire. This automatic fire may either be organic in or made available to the rifle squad. In the proposed USAIS Platoon the attachment of M60 MGs from the weapons squad fulfills this need.

(c) If a suitable automatic weapon is developed which will permit one Soldier to fire, service, and transport both weapon and ammunition, while at the same time providing long-range, accurate, sustained fire, it should be submitted to field test and evaluated as an organic squad automatic fire weapon.

13. RECOMMENDATIONS:

a. That the conclusions set forth in paragraph 12 be approved.

b. That the proposed USAIS Rifle Platoon (Annex A) be accepted as being that organization, which in the present time frame, represents the best balance of personnel, weapons, equipment, and tactics.

c. That US Army CONARC initiate further testing of the proposed USAIS Rifle Platoon to determine the optimum rifle company organization through tactical field evaluation. (A discussion of the tactical employment of the proposed USAIS Platoon is contained in Annex B.)

**USAIS RIFLE PLATOON
DISMOUNTED MECHANIZED AIRBORNE
1/46**

**ANNEX A
USAIS PLATOON**

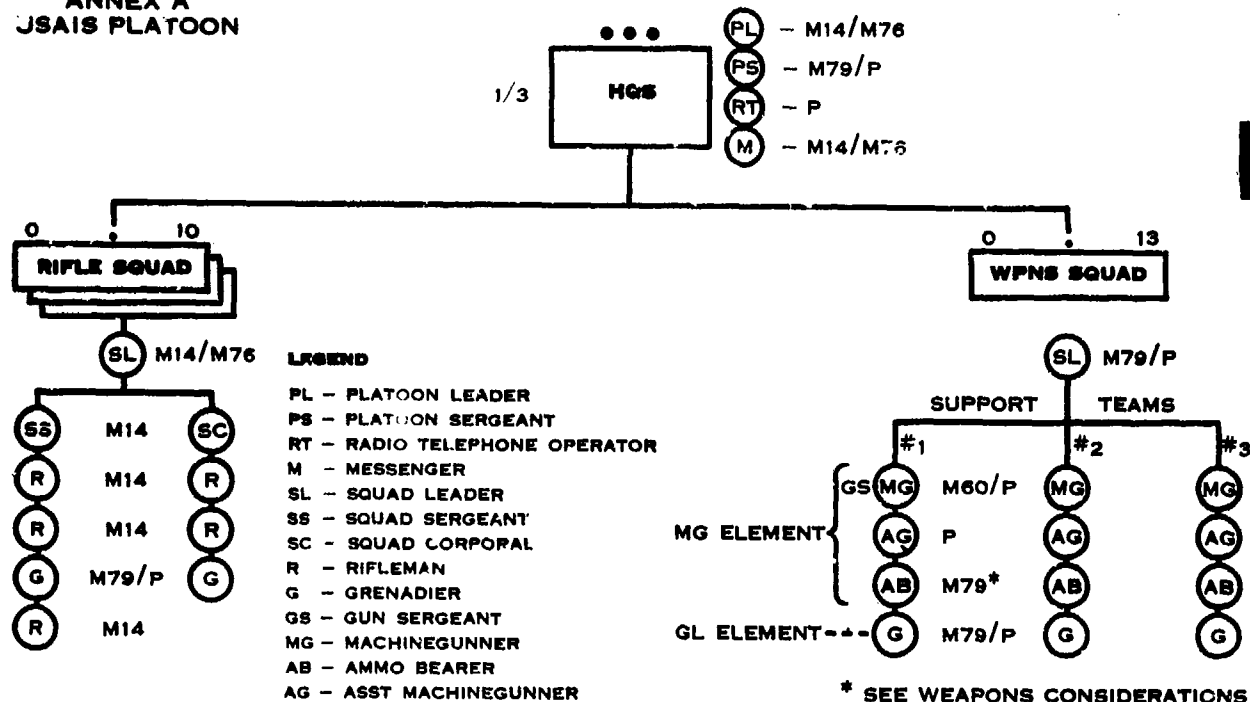


Figure 3.

1. WEAPONS CONSIDERATIONS.

a. Why the M60 MG Ammunition Bearer was not additionally assigned the pistol:

(1) The ammunition bearer is the "workhorse" of not only the MG team but of the entire platoon. At present his individual load, the heaviest in the unit, consists of 63.73 pounds. If he were assigned a .45 Cal pistol with the basic load of ammunition, his load would increase by 4.31 pounds to a figure of 68.04 pounds. Since he is normally in the vicinity of the MG team, it is believed that his individual safety is adequately provided for.

(2) At times the ammunition bearer will be required to perform duties away from his team, i.e., resupply of ammunition, etc. In this role the M79 grenade launcher should provide him adequate personal protection. If the recommended cannister round is produced for the M79, he would then in effect be armed with a 40mm "shotgun."

(3) When the APHHW is introduced into the weapons system, the small arms requirement will be filled.

b. Ratio of types of weapons to platoon strength.

| Type Weapon | Number of Weapons | % Weapons to Personnel |
|-------------|-------------------|------------------------|
| M14 | 26* | 55.3 |
| M79 | 14 | 29.7 |
| Pistol | 18 | 38.3 |

*Does not include the drivers of the APCs, who would be armed with the M14 rifle.

ANNEX B

TACTICAL EMPLOYMENT OF PROPOSED USAIS PLATOON

1. GENERAL:

a. This discussion of the tactical employment of the proposed USAIS Platoon will be depicted in relation to present-day tactics with one exception; the support - maneuver concept will be used in lieu of the fire team concept.

b. The discussion will be concerned only with the dismounted role of the infantry platoon.

c. Nonorganic supporting weapons will not be specifically mentioned.

d. Assumptions:

(1) That the members of the platoon have a reasonable degree of weapons familiarity. Platoon training to include the establishment of SOPs has been accomplished.

(2) That the "as needed" principle is in effect, yet its logistical implications on higher headquarters is minimized herein.

2. ADVANCE TO CONTACT PHASE:

a. General Situation: The rifle platoon has been given the mission of providing the advance party for the company. The platoon leader has designated the 1st rifle squad as point and has attached Support Team #1 (complete) to it. The point is moving to contact and a road splits the column. Two riflemen (scouts) are leading. The light team is on the left of the road under the control of the squad corporal. The heavy team is on the right under the control of the squad sergeant. Grenadiers are to the rear and the grenadier from the support team is close by. The MG element is bringing up the rear of the formation. The squad leader is at a place where he can best control the movement of the squad.

The platoon (-) follows the point squad. Order of march is 2d squad, weapons squad(-), 3d squad. The platoon leader is in front of the 2d squad. His radio telephone operator and messenger accompany him. The platoon sergeant is with the 3d squad in the rear.

b. Enemy Action: Both scouts are fired upon by small arms fire. They return the fire and designate the target to the squad leader. The squad leader makes a rapid estimate of the situation and decides to execute a combat drill play. He designates the squad sergeant to form a base of fire consisting of the MG element and two (2) grenadiers. He will control the maneuver element consisting of the squad corporal, one (1) grenadier, and the remaining riflemen (3). The maneuver and assault is then executed, using individual rushes where necessary.

c. Variation: Once the base of fire has engaged the target, one of the scouts is able to disengage and join the maneuver group. As the maneuver group approaches the objective, they are pinned down by effective small arms fire. The squad leader then splits his maneuver group, leaving the squad corporal, grenadier, and scout to continue firing while he executes a new maneuver with the remainder of the group (total of 4 men).

3. ATTACK PHASE:

a. General Situation: The company commander has issued an attack order to his platoon leaders. The company objective has been divided into two (2) platoon objectives. There

are no attachments to the attacking platoons. The platoon leader makes his estimate and issues his attack order. The weapons squad will form the base of fire under the control of the weapons squad leader. The three (3) MG elements, minus all ammunition bearers, are to select firing positions and fire under the control of the gun sergeants, weapons squad leader, or platoon sergeant. The grenade launcher elements plus the three (3) ammunition bearers are to form a battery of six (6) grenade launchers under the control of the weapons squad leader, senior grenadier, or platoon sergeant. All fires are to support the attack of the platoon(-). The fires will shift on signal and displace on order according to plan.

b. Enemy Action: The supporting weapons place fire on the objective. The platoon leader is maneuvering from the LD to his assault line. The assault is launched; fires are shifted when necessary; and the weapons squad displaces on order. The assaulting rifle squads use the automatic fire capability of the M-14 rifle only if directed to by their leaders. The assault is conducted by squad, team, or individual rushes if necessary; climaxed by a charge from the final rush line. The squads have used all available weapons, personnel, and supporting fires to seize the objective.

c. Variation: This attack may be conducted without the benefit of supporting fires until discovered by the enemy. This technique will allow for maximum surprise by using patrol or infiltration type movements from the line of departure to the assault line. When the attack is discovered, supporting fires will fall on the objective in T O T fashion. One complete support team may also accompany the maneuver element should the need exist for close automatic fire support. This method retains an effective base of fire and yet provides flexibility in emplacing support teams to support the attack.

4. DEFENSIVE PHASE:

a. General Situation: The platoon leader has received a defensive order from the company commander. The rifle squads are deployed in a linear-type defense. The 1st support team of the weapons squad is attached to the 1st rifle squad. There has been an additional issue of LAWS so that each foxhole has at least one available. Claymores have been issued and there is one emplaced in front of each position. Ammunition resupply has been accomplished; wire and telephones have been delivered and installed. The platoon messenger has been dispatched to the company command post. Local security is placed forward of the defensive position with wire communication to some of the listening posts. The platoon is dug in and continues to improve their positions. The 1st rifle squad leader has elected to form his own three (3) man grenade launcher battery under the control of his squad sergeant. He has received another telephone to tie it in with the platoon wire system. The MG element of the 1st support team has established an FPL. The ammunition bearer of the MG is registering his M 79 to fill in the dead space of the FPL at varying ranges.

The weapons squad (-) is retained under platoon control. Two (2) MG elements are employed in pairs with the M 79 of the ammunition bearers filling in the dead space. These guns are under the control of the senior gun sergeant. A three (3) man grenade launcher battery has been formed consisting of the weapons squad leader and the two (2) remaining grenadiers. This battery will be fired in support of the platoon front.

The platoon sergeant at this time is reconnoitering a route of withdrawal.

b. Enemy Action: The local security gives the alarm of an impending enemy attack and is directed to withdraw within the defensive position. The MG elements engage the enemy with long range fire endeavoring to make him deploy. The ammunition bearers fire their M 79s to complement the fires of the machineguns. The two (2) batteries of M 79 engage targets on separate approaches. As the enemy moves to within small arms range, the fire from the rifle

squads is brought to bear on the attacking force. Enemy tanks move forward to assist the enemy infantry in their assault. LAWs are fired at the tanks from any position on line when in range. The enemy is starting to make his assault. The platoon leader calls for the final protective fires. MGs fire their FPLs. Claymores are fired on order. Ammunition bearers are filling in the dead space of the FPL with M 79 fire. The platoon battery of M 79 and the 1st rifle squad battery of M 79 are firing their salvo areas. The riflemen in the 3d squad area are directed to place their M 14s on automatic and engage the assaulting force. The devastating fire has taken its toll. The enemy attack has been repulsed.

c. Variation: The platoon organizes the defensive position by squad strong points. Two (2) squads are oriented on the flanks while the other rifle squad is positioned in depth in between the flank squads. This arrangement negates the need for supplementary positions for the platoon. Two (2) support teams are placed in the rear squad area. The machineguns use the "silent gun" principle. All-around defense has been obtained, yet all fires can be massed on the platoon "killing zone."

5. RETROGRADE PHASE:

a. General Situation: An order is received from the company commander to execute a night withdrawal at 2400 hours. Detachments left in contact will be under the control of the executive officer. The detachments are to consist of no more than one-third of the rifle strength and one-half of the crew-served weapons. The platoon leader elects to leave his center squad in contact. No 2 support team is attached to the 2d (center) squad. The remainder of the platoon will withdraw over the route previously reconnoitered by the platoon sergeant. Squad assembly areas are designated and squad leaders directed to recon the route back to the platoon assembly area.

b. Enemy Action: At 2400 hours the flank squads begin their thinning of the lines. When the whole squad has reached the squad assembly area, they begin their movement to the platoon assembly area. The center squad extends its flanks so as to better cover the front of the platoon position. The squad leader has positioned the support team covering the most dangerous approach into the platoon position. He insures that fires of the M 79s will be spread along the entire front of the position. The radio-telephone operator ties the platoon wire line into the company wire giving the 2d squad leader communication with the executive officer. Enemy patrols start to probe the defensive position. Through the use of supporting fires, pyrotechnics and organic weapons, the detachment is able to give the impression that the platoon is still on the hill. At 0200 hours, the withdrawal of the detachments is ordered. The 2d squad leader cuts sections of the wire, rallies his squad and moves to the assembly area. The withdrawal is complete.

c. Variation: The platoon leader may elect to leave two of his support teams with the detachment left in contact. Or he may split the teams and leave various combinations of elements.

Should the platoon leader have his defensive position organized into squad strong points, the two forward squads can withdraw under the cover of the rear squad. This type of action plans for a withdrawal under pressure and permits one series of control measures as well as one general technique of withdrawal.

6. PATROLLING PHASE:

General Situation: The rifle platoon is in a reserve position when the platoon leader receives an order from the company commander to organize two combat patrols for employment the following day. Any additional items of equipment may be requisitioned from company headquarters. The platoon leader elects to divide his platoon in half. He will command one patrol and the platoon sergeant the other.

ANNEX C

1. RIFLE PLATOON GRADE STRUCTURE:

| <u>PRESENT PLATOON</u> | | | <u>ROAD PLATOON</u> | | | <u>USAIS PLATOON</u> | | |
|------------------------|--------------|-------|---------------------|--------------|-------|----------------------|--------------|---------|
| Plat Sgt | | E-7 | Plat Sgt | | E-7 | Plat Sgt | | E-7 |
| | <u>R/Sqd</u> | | | <u>R/Sqd</u> | | | <u>R/Sqd</u> | |
| Sqd Ldr | (3) | E-6 | Sqd Ldr. | (3) | E-6 | Sqd Ldr | (3) | E-6 |
| F. T. Ldr | (6) | E-5 | Tm Ldr | (6) | E-5 | Sqd Sgt | (3) | E-5 |
| A. Rifleman | (6) | E-4 | A. Rifleman | (6) | E-4 | Sqd Cpl | (3) | E-4 Cpl |
| Sr. Rifleman | (6) | E-4 | Grenadier | (6) | E-4 | Grenadier | (6) | E-4 |
| | <u>W/Sqd</u> | | | <u>W/Sqd</u> | | | <u>W/Sqd</u> | |
| Sqd Ldr | (1) | E-6 | Sqd Ldr | (1) | E-6 | Sqd Ldr | (1) | E-6 |
| Mach Gunner | (2) | E-4 | Mach Gunner | (2) | E-4 | Supt Tm Ldr | (3) | E-5 |
| Rocket Gunner | (1) | E-4 | Rocket Gunner | (2) | E-4 | Grenadier | (3) | E-4 |
| | | | | | | Asst Gunner | (3) | E-4 |
| TOTAL | E-7 | (1) | TOTAL | E-7 | (1) | TOTAL | E-7 | (1) |
| | E-6 | (4) | | E-6 | (4) | | E-6 | (4) |
| | E-5 | (6) | | E-5 | (6) | | E-5 | (6) |
| | E-4 | (15) | | E-4 | (16) | | E-4 | (15) |
| Grade Ratio | | 26/43 | | | 27/43 | | | 26/46 |

2. DISCUSSION OF GRADE STRUCTURE USAIS PLATOON:

a. Although the determination of grades, MOS's, skill digits, and Pro-Pay considerations was not included in the scope of the test, it was recognized that grades are closely related to many of the test objectives, span of control, fire team concept, etc. Therefore, an effort was made to maintain relatively the same grade ratio as the present and ROAD platoons, and yet not lose deserved rank in the process.

b. The grade structure of the USAIS Platoon indicates two (2) positions that are worthy of further elaboration:

(1) Squad Corporal: This position returns the rank of corporal to the Infantry and so provides for a more logical progression of promotion -- Private to Corporal to Sergeant, as opposed to promoting from specialist grade to noncommissioned grade. The introduction of the Corporal should be considered as the addition of a corporal to the rifle squad. The development of junior leaders will be greatly assisted.

(2) Support Team Leader: This position calls for a Gun-Sergeant acting as a gunner-leader. He has two (2) primary jobs; gunner of the machinegun and the leader of the support team. As gunner he is responsible for the operation of the machinegun element, through firing the machinegun and controlling the fire of the ammunition bearer's M79. As leader of the support team, he controls the fire of the machinegun element and the fire of the grenadier. When the support team is attached to a rifle squad, he advises the rifle squad leader on the employment of the weapons of the support team.

ANNEX D

DETAILED DISCUSSIONS (TEST OBJECTIVES)

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SECTION I

ADVISABILITY OF PLACING THE M60 MG IN AN AR OR MG ROLE WITHIN THE RIFLE SQUAD

1. General: In the plan of test, eight (8) different rifle squad configurations were designated. Some placed the M14 (M) in the AR role while others utilized the M60 as an AR. Another configuration depicted a two-man machinegun team. This discussion will be limited to an evaluation of the M60 in both the AR and machinegun role within the rifle squad. It will be subdivided as follows: The first part will summarize the advantages and disadvantages of the M60 when used in the AR role; the second part will discuss the M60 in the machinegun role.

2. M60 in the AR Role: Because of the reported unreliability of the M14 (M) in the AR role, supported by previous USAIS testing, it was suggested that the M60, because of its lightness, high rate of fire, and long-range accuracy, be substituted for this weapon. Two candidate organizations, Squads 10A and 11A, were provided to test this objective. Each AR gunner was provided a basic load of 200 rounds of belted ammunition. No additional ammunition or spare parts were carried. An assistant AR man was not assigned.

a. Movement to Contact: (Blank fire)

(1) Advantages: When engaged by enemy fire, the squad leader established a base of fire with one fire team, and initiated his maneuver with the other team. Usually, the AR built up a sustained volume of fire, complemented by rifles. The bipod provided stability. The ranges at which each action took place were well within the rated accuracy of the weapon (200 meters), and it was safe to assume that target "destruction" was accomplished.

(2) Disadvantages: Initial response to enemy fire was slower than the response of the M14 (M). This was due in part to human error, additional weight, and a more complex weapon. Tactical mobility was impeded somewhat, although the gunners did manage to remain with their respective elements. Two hundred rounds of ammunition appeared insufficient to meet the squad's needs; however, any additional ammunition would have to be carried by riflemen, since the AR man already had the heaviest load. See Annex D, par 24d, "The Soldier's Load."

b. Attack: (Blank and live fire)

(1) Advantages: AR men used the hip-fire position in the assault, which tended to slow the gunner to a momentary halt, but allowed him to place a heavy volume of assault fire on the objective. Though admittedly not as accurate as aimed rifle shots, this suppressing fire kept the enemy down and provided a psychological advantage.

(2) Disadvantages: Often a cessation of fire was observed. This was due to human error, running out of ammunition, and weapons failure. Once an AR gunner stopped firing he usually remained out of action for the duration of the assault. The gunner could not reload the weapon while moving and had extreme difficulty in hanging the bandoleer on the feed plate or reducing a stoppage. When moving from the LD to the assault line, the bipod legs sometimes caught on underbrush and slowed the gunner's movement.

c. Defense:

(1) Advantages: In both squads 10A and 11A, AR's were employed within each fire team. They provided long-range accurate fire (beyond 400 meters) from the bipod mount. Target hit comparison was in favor of the M60 over the M14 (M). When directed to establish and fire a FPL, though admittedly not as accurate as a MG employing the tripod, the AR showed a high potential.

(2) Disadvantages: During the sustained fire portions of the test some stoppages occurred. Most of these were attributed to the last link of the belt falling into the feed plate. (This type of stoppage can be reduced by gunner training and an improved feed plate.) AR gunners also ran out of ammunition quickly, and though this was attributed in some cases to poor fire discipline it was recognized that 200 rounds of ammunition was not enough for this weapon. Stockpiling of ammunition would have been necessary to provide adequate staying power. Due to the characteristics of the M60 (firing a belt, rather than a clip), squad leaders had difficulty in "keeping gunners from firing all their ammunition," thus losing fire superiority.

d. Retrograde:

(1) Advantages: Fire teams had an effective long-range weapon to use in disengagement during the withdrawal. These long-range fires caused the enemy to prematurely deploy, thus assisting in the success of the withdrawal.

(2) Disadvantages: The very nature of a withdrawal demands speed of movement. We must carefully weigh the advantage of long-range firepower as opposed to the excessive personnel load which restricts the mobility of the AR man; thus, restricting the mobility of the squad.

3. M60 in the MG Role: Candidate squads 9A and 10B had an organic two-man MG team built in to their organization.

a. Movement to Contact: (Blank fire)

(1) Advantages: When engaged by enemy fire, the squad established a base of fire with one fire team, and initiated his maneuver with the other team. Usually, the AR built up a sustained volume of fire, complemented by rifles. The bipod provided stability. The ranges at which each action took place were well within the rated accuracy of the weapon (200 meters), and it was safe to assume that target "destruction" was accomplished. The two-man crew further enhanced the weapons capability by providing increased ammunition (300 rounds) and an additional man to service the weapon.

(2) Disadvantages: Initial response to enemy fire was slow. Squad leaders were confused when rapid selection of firing positions was required. Selection of said positions was often made at the expense of timely employment of the maneuver element. Initial response to enemy fire was accomplished more quickly by the squad M79's and M14 rifles. Coordination between the support and maneuver elements was not effective.

b. Attack: (Blank and live fire)

(1) Advantages: AR men used the hip-fire position in the assault, which tended to slow the gunner to a momentary halt, but allowed him to place a heavy volume of assault fire on the objective. Though admittedly not as accurate as aimed rifle shots, this suppressing fire kept the enemy down and provided a psychological advantage.

(2) Disadvantages: Target hit patterns showed the accuracy to be unsatisfactory when the MG was used in the assault. The two-man MG team could have provided more effective fire if employed as riflemen.

c. Defense:

(1) Advantages: During this phase the M60 MG team equaled and sometimes exceeded the accuracy of the M14 rifle. Extracted below are target hit comparisons for squads 9A and 10B.

| | <u>Squad 9A</u> | | <u>Squad 10B</u> | |
|-------------|-----------------|------------|------------------|------------|
| <u>Ammo</u> | <u>M14</u> | <u>M60</u> | <u>M14</u> | <u>M60</u> |
| Issued | 600 | 500 | 700 | 500 |
| Used | 243 | 200 | 281 | 240 |
| % Used | 40.5 | 61.5 | 40.1 | 48.0 |
| <u>Hits</u> | | | | |
| Total Hits | 82 | 64 | 73 | 59 |
| % Hits | 33.7 | 32.0 | 25.9 | 24.5 |

(2) Disadvantages: The amount of MG ammunition expended during this phase would necessitate either stockpiling or very responsive resupply. With a two-man crew no ammunition bearer is available for this purpose.

d. Retrograde:

(1) Advantages: A long-range organic weapon assisted the squad materially in the disengagement phase.

(2) Disadvantages: No major disadvantages were noted during this phase.

4. Ammunition Expenditure and Target Hit Data:

a. Comparative weapons data collected during the squad phase is contained in Annex E for the M14 (M), M60 MG, and M14 rifle.

b. Figure 4 depicts platoon phase weapons data for Platoon "B" where the two-man MG team was tested organic to the rifle squad in an AR role and used in the weapons squad in a MG role. This platoon used its M14 rifles in the semiautomatic role only.

c. Figure 5 depicts similar information for Platoon "A" where the M60 MG was employed only as a MG in the weapons squad. The riflemen of this platoon utilized the selectors and fired full automatic during this phase of the test.

d. Figure 6 contains a combined total of both platoons during the platoon phase of the test.

AMMUNITION EXPENDITURES AND TARGET HITS

PLATOON B

| Phase | ATTACK | | | DEFENSE | | | COMBINED | | |
|-----------------------|--------|---------|---------|---------|---------|---------|----------|---------|---------|
| Ammo | M14 | M60 W/S | M60 R/S | M14 | M60 W/S | M60 R/S | M14 | M60 W/S | M60 R/S |
| Issued | 2200 | 1600 | 2400 | 1810 | 778 | 1850 | 4010 | 2378 | 4250 |
| Used | 890 | 1250 | 825 | 1199 | 698 | 1330 | 2089 | 1948 | 2155 |
| % Used | 44.0 | 78.1 | 34.3 | 66.2 | 89.7 | 71.9 | 52.8 | 81.0 | 50.7 |
| Hits | | | | | | | | | |
| Total Hits | 148 | 20 | 3 | 261 | 157 | 16 | 409 | 177 | 19 |
| % Hits | 16.6 | 1.6 | 0.4 | 21.7 | 22.5 | 1.2 | 19.5 | 9.1 | 0.9 |
| Targets | | | | | | | | | |
| Exposed | 20 | 20 | 20 | 23 | 23 | 23 | 43 | 43 | 43 |
| Hit | 15 | 7 | 3 | 19 | 14 | 6 | 34 | 21 | 9 |
| Total Targets Exposed | 20 | | | 23 | | | 43 | | |
| Total Targets Hit | 17 | | | 21 | | | 38 | | |

Figure 4

AMMUNITION EXPENDITURES AND TARGET HITS

PLATOON A

| Phase | ATTACK | | DEFENSE | | COMBINED | |
|-----------------------|--------|------|---------|------|----------|------|
| Ammo | M14 | M60 | M14 | M60 | M14 | M60 |
| Issued | 4800 | 3000 | 4510 | 1800 | 9310 | 4800 |
| Used | 1730 | 1200 | 3640 | 1200 | 5370 | 2400 |
| % Used | 36.0 | 40.0 | 80.7 | 66.6 | 57.6 | 50.0 |
| Hits | | | | | | |
| Total Hits | 61 | 18 | 279 | 356 | 340 | 374 |
| % Hits | 3.5 | 1.5 | 6.7 | 29.6 | 6.3 | 15.5 |
| Targets | | | | | | |
| Exposed | 20 | 20 | 23 | 23 | 43 | 43 |
| Hit | 13 | 8 | 20 | 14 | 33 | 22 |
| Total Targets Exposed | 20 | | 23 | | 43 | |
| Total Targets Hit | 15 | | 21 | | 36 | |

Figure 5

AMMUNITION EXPENDITURES AND TARGET HITS

PLATOONS A AND B COMBINED

| Phase | ATTACK | | DEFENSE | | COMBINED | |
|-----------------------|--------|------|---------|------|----------|-------|
| Ammo | M14 | M60 | M14 | M60 | M14 | M60 |
| Issued | 7000 | 7000 | 6320 | 4428 | 13320 | 11428 |
| Used | 2620 | 3275 | 4839 | 3228 | 7459 | 6503 |
| % Used | 37.4 | 46.7 | 76.5 | 72.9 | 55.9 | 56.9 |
| Hits | | | | | | |
| Total Hits | 209 | 41 | 540 | 529 | 749 | 570 |
| % Hits | 7.9 | 1.2 | 11.1 | 16.6 | 10.0 | 8.7 |
| Targets | | | | | | |
| Exposed | 40 | 40 | 46 | 46 | 86 | 86 |
| Hit | 28 | 18 | 39 | 34 | 67 | 52 |
| Total Targets Exposed | 40 | | 46 | | 86 | |
| Total Targets Hit | 32 | | 42 | | 74 | |

NOTE: M60 MG in both roles are combined above.

Figure 6

5. CONCLUSIONS:

- a. That the M60 requires more than one man to effectively service and operate the weapon.
- b. That the M60 is more effective when used in a machinegun team of three men than in any other combination, due to its increased capabilities; i.e., adequate ammunition supply, tripod stability, spare barrel and parts.
- c. That the machinegun was employed to its greatest advantage when used in the weapons squad of the rifle platoon.
- d. That the M60 in the AR role restricts to a degree the mobility and maneuverability of the rifle squad.
- e. That a requirement exists for a modified bandoleer which will aid in loading the weapon while moving. Some arrangement must be perfected to rid the weapon of the final link; thus, eliminating many stoppages.
- f. That machineguns in the weapons squad adequately provide flexibility by attachment to the rifle squads when required.
- g. That target hit patterns of the M60 show a definite advantage over the M14 (M) at the greater ranges. Moreover, that the M60 used on a tripod as a MG consistently outfired the M60 on bipod in the AR role. Neither, however, fired as well as the M14 rifle.

6. RECOMMENDATION: That the current M60 machinegun not be organic to the rifle squad in either the AR or MG role.

SECTION II

ASSIGNMENT AND NUMBER OF M79 GRENADE LAUNCHERS

7. It was agreed that at least two (2) M79 launchers should be placed in the weapons squad. (Annex A)

a. Two weapons in the rifle squad allows for a balance in M79s when the squad divides into fire teams. Because of the weapon's one shot capability, two weapons will give the squad more continuous fire. When in a defensive situation, the squad will have an area fire weapon to cover both flanks and more than one enemy avenue of approach into the squad's position. In the attack, the firepower of the supporting element will be materially augmented. By use of the grenade launcher provided by the support team, the rifle squad leader has the same option as the platoon leader in providing a three or four weapon grenade section which could be fired as a battery. An organic two weapon section can also be formed.

b. Three of these weapons in the squad, assigned to other than the leaders, organically builds an unbalance in weapons into fire team employment. Three M79s could be habitually used in the "salvo" role; but this is thought to be too restrictive and inflexible. As explained, the desirable features obtained by three weapons can be obtained by the attachment of the support team. Increasing the number of M79s, decreases the availability of rifle power and, considering the proposed grade (E-4) of the grenadier, would cause a disproportionate increase in the overall grade ratio of the platoon.

c. The assignment of only one M79 to the rifle squad would not provide sufficient advantages as discussed above.

8. The weapon should be carried or assigned to someone in the rifle squad other than the leaders. The capabilities of this weapon for delivering direct, indirect, point, or area fire does not rule out the possibility of employing even more than the number of M79 launchers recommended above.

9. The M79 provides the rifle squad leader the capability of covering dead space between minimum 81mm mortar and hand grenade range.

10. The weight of the weapon does not adversely affect the mobility and maneuverability of the squad or the individual.

11. The accuracy of the M79 is excellent; however, it is felt that the battle sight should be set approaching a mid-range rather than the 80 meters on the current model. A discussion of an experiment using an alternate aiming point method is contained in par 15.

12. AMMUNITION:

a. The ammunition fired during the test consisted solely of the HE round armed with the T333E1 fuze. Of all rounds fired, only three duds were noted, all caused from ricochets. It was noted that a ricochet round, upon striking a solid object, will detonate. An experienced gunner might thus be able to deflect a round into the mouth of a cave or dugout.

b. Different types of ammunition should be devised to add to the versatility of this weapon (i.e., WP, AP, cannister, illuminating).

c. The basic load of ammunition recommended for the weapon in TC 23-3 is 27 rounds. With present ammunition carriers, it appears that 27 rounds may be too much for the individual to carry comfortably. Some type of elastic loop carrier could be devised so that the rounds could be carried across the body. It was noted that the plastic cups in the bandoleer tend to adhere to the ogives in wet weather, thus causing delay in removal.

13. At night the M79 is easily aimed at visible targets. The large barrel makes night sighting feasible. Muzzle flash at night is very small and rapid. The muzzle flash of the M79 is much less than an M1 or M14. This flash might be visible to a well-trained observer at 200 meters. The noise of firing is negligible, making it extremely difficult to locate at night.

14. The present single shot weapon is satisfactory and increases greatly the combat effectiveness of the rifle squad and platoon. An improved weapon with a multishot capability would more than double the effectiveness.

15. Observations of M79 Firing Using Alternate Aiming Point. During the squad test, an experiment was conducted with a pair of M79s, using an alternate aiming point method of fire. Both gunners fired from the same foxhole at a target one hundred eighty meters from the gun position. Battle sights were used. (See figure 7)



Figure 7. M79 Gunner Sensing Experiment

a. One gunner announced his point of aim and fired; the second gunner, whose weapon was already loaded, sensed the round, announced a new point of aim and fired a second round. Effective fire was obtained on the target with the fourth round. (See Figure 8)



Figure 8. Direct Hit By M79

b. Considering the above mentioned experiment and other observations of the M79 throughout the squad and platoon test, the following areas should be further developed:

- (1) Utilizing the weapon as a hand-held mortar (Butt on ground).
- (2) Firing two or more weapons in battery using area fire techniques.
- (3) Firing the weapon in an indirect fire role, using a gunner and observer.
- (4) Firing weapons extensively in night operations.

SECTION III

VALIDITY OF THE FIRE TEAM CONCEPT

16. The evaluators were unable to secure a military definition for the "fire team concept." To most Soldiers the term "fire team concept" generally means two (2) balanced groups of men, weapons, and leaders always functioning as teams. In the absence of a more appropriate definition the following was devised.

17. The fire team concept was defined by the evaluation section as: "A groupment of individuals and weapons, in either a balanced or unbalanced configuration, each of which can function as the base of fire or maneuver element." Based on observations and anticipated combat

needs, the generally accepted fire team concept was found to be lacking in flexibility. At times there is a requirement for a secondary maneuver element as implied by the proposed definition. The squad should thus be used in its entirety when possible, but must retain the flexibility of breaking into teams if necessary to meet a particular situation.

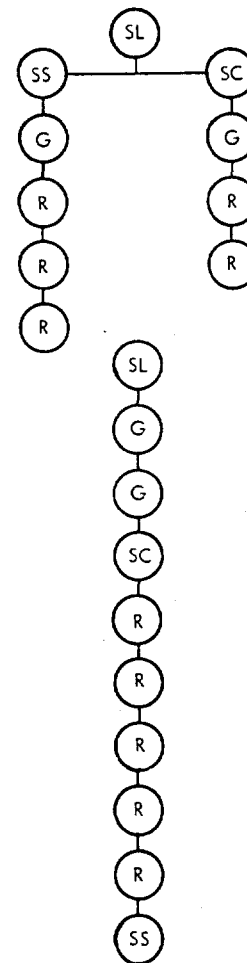
18. Most of the time the squad functions as a complete squad in a coordinated platoon action. When so doing, the requirement exists for sufficient junior leaders within the squad to insure adequate control and retain flexibility.

19. There is also a definite requirement for the squad to be able to function as two teams whether balanced or unbalanced. In this regard, both of the aforementioned fire team concept definitions are valid.

20. Essentially fire team employment is valid. More emphasis, however, should be placed on broadening its scope. As a primary consideration, other variations to the basic theme should be stressed, which while not disallowing the fire team concept, take advantage of the years of training devoted to it and continue to improve it. Units should be trained in these variations; SOPs developed; and the scope of battle drill increased to gain more responsiveness and flexibility.

21. The proposed USAIS squad organization with its new weapons is more flexible to incorporate possible future concepts of expanded fire team employment, through its unbalanced teams as illustrated below.

- a. This diagram shows the control of the Squad Leader in relation to the Squad Sergeant and the Squad Corporal when using the fire team concept. This configuration also shows the usual chain of command under this circumstance.
- b. This diagram shows the control of the Squad Leader in relation to the squad's junior leaders in another configuration. This configuration contains past organizations' Squad Leader-Assistant Squad Leader relationship. The position of the Squad Corporal is not fixed; nor is it intended that the chain of command be from Private to Corporal to Squad Sergeant to Squad Leader. This method of organization essentially portrays the squad when using the Support-Maneuver Concept. Flexibility is obtained through the use of all the leaders and the tailoring of the remaining squad members.



SECTION IV

PERSONNEL LOAD AND LOGISTICAL IMPLICATIONS

22. PERSONNEL LOAD.

a. Brigadier General S. L. A. Marshall noted in his study of the Omaha Beach Assault of 1944 that "Weight and water - directly or indirectly - were the causes of the greater part of our losses at the beach.

The fundamental error was a simple one. We over-estimate the physical strength of men in conditions of combat. This almost cost us the beachhead. Since it is the same kind of mistake that armies and their commanders have been making for centuries, there is every reason to believe it will happen again.

We do lip service to the principle that the aim in logistics is not simply to support and supply the men on the fire line, but to relieve them of all unnecessary strain and tension."

In spite of our combat experience it was found during the Squad test that the Soldier's load was still too heavy, (e.g., each machinegunner carried a load of 78 pounds).

b. The evaluators, through their study of the materiel, equipment, weapons, ammunition and individual clothing carried by the test squads, concluded that all items could be divided into two general categories: (1) basic clothing and equipment, and (2) weapons load.



Figure 9. The Soldier's Load

c. The weight of the clothing and equipment alone came to 35.92 pounds (see paragraph 24a). The weapons load of any Soldier is based on the specific weapon he needs to accomplish his mission, and for each weapon there is a basic load of ammunition. It follows that the weapons load (and total load) varies for each individual Soldier.

d. The evaluators recognized that if a weight reduction was to be made, the individual's basic items of clothing and equipment had to be reduced by item or by weight (e.g., the taking away the armored vest in the squad phase, reduced each man's load by eight (8) pounds).

e. Upon studying these items, there were some which were recognized to be: (1) seldom needed, (2) needed by certain individuals or during certain phases of combat, and (3) needed because of inclement weather or anticipated enemy action. The basic list was once again divided into items, (1) always needed (basic items), and (2) sometimes needed. This approach resulted in the reduction of each Soldier's load by 18.50 pounds leaving the individual with a basic equipment load of 17.57 pounds. (Paragraph 24b.)



Figure 10. The "As Needed" Principle Applied To Machine Gunner

f. It was discovered during the Platoon Test, that this "as needed" principle could be expanded to include items of organizational equipment normally carried by individuals in the platoon. See paragraph 24c.

g. As was concluded at the end of the Squad Test, an attempt would be made to limit the load of the Soldier to 45 pounds. This "as needed" principle does not preclude commanders from having the flexibility of adding needed items as the situation demands. In the case of the rifleman approximately 12 pounds of item combinations or ammunition could be added and still the 45 pounds maximum limit would not be exceeded. It was felt by test personnel that the maximum upper limit should be strictly adhered to, in order to materially increase the Infantryman's strength, mobility and responsiveness.

h. Miscellaneous:

(1) By deleting the M67, 90mm Recoilless Rifle, the heaviest single item of platoon equipment was eliminated. The weapon weighs 35 pounds empty and 44.25 pounds with a round in the chamber.

(2) As ammunition is expended, the total load of the individual is proportionately reduced. This is significant, especially for the M79 since each round weighs 1/2 pound.

(3) To eliminate the pack, a field expedient was used. An extra M14 ammunition pouch was issued to each man to be carried on his weapons belt. There is sufficient room in the pouch to carry minimum essential toilet articles and two cans of "C" rations. The poncho when needed was carried rolled on the belt.

(4) Standard items which will be manufactured lighter in the future will have a beneficial effect on further reducing the load (e.g., a lighter entrenching tool with a telescoping handle).

(5) Increased numbers of LAWS should be considered "as needed" to fulfill the platoon's particular mission, at the time.

23. LOGISTICAL IMPLICATIONS.

a. Paragraph 24 shows the logistical implications of the "as needed" principle in terms of transportation. It will be the responsibility of company and higher to transport the "as needed" equipment. If this is not possible and it is considered desirable to maintain this equipment within the platoon, then a platoon vehicle must be assigned to the dismounted and airborne platoons. A vehicle could carry all or part of the "as needed" equipment, depending upon how much of it was carried by the individual (as explained above). This problem does not exist in the mechanized platoon where squad armored personnel carriers are organic to the platoon.

b. The present rifle squad has a total of 4,540 rounds of 7.62mm ammunition as a basic load. This load services the two (2) AR men armed with the M14 modified rifle and nine (9) riflemen. The ammunition is broken down with 260 rounds per automatic rifle and 100 rounds per M14 rifle. This makes available 520 rounds for the automatic rifle and 900 rounds for the riflemen--a total of 1,420 "on individual" rounds within the rifle squad. The back-up is divided between unit transportation and ammunition trains. 1,640 rounds is on unit transportation and 1,480 rounds is on trains, a total back-up of 3,120 rounds.

c. In the recommended USAIS rifle squad organization the rifleman still retains 100 rounds on individual; however, there is one (1) less rifleman and the automatic rifles have been deleted. This leaves 800 rounds of 7.62mm ammunition in the rifle squad as opposed to the 1,420 rounds in the present organization. In the recommended organization one (1) rifleman and two (2) automatic riflemen are deleted. There is also a reduction in the amount of "back-up" ammunition. The recommended on unit transportation load is 960 rounds. Also, 960 rounds are on the ammunition trains. This gives the recommended rifle squad a basic load of 2,820 rounds as opposed to the former 4,540 rounds. It is also proposed that the selectors of the M14 rifles be left on each rifle. One might feel that this will entice the Soldier to always fire the weapon set on full-automatic, thus causing an enormous ammunition expenditure. Through proper selector training and command control, ammunition will not be wasted and the increase in logistics will be negligible.



Figure 11. M-14 (MOD) - Unsuitability Of AR Belt As Container For M-14 Magazines

d. The proposed USAIS organization introduces the M79 grenade launcher. There are fourteen (14) M79s located within the proposed rifle platoon. See Annex A. The present ammunition breakdown for the M79 is twenty-five (25) rounds on individual with a back-up of forty-five (45) rounds on unit transportation and forty-five (45) rounds on ammunition trains. The recommended ammunition breakdown for the M79 is changed only for the on-individual amounts and here it is reduced from twenty-five (25) to eighteen (18). A recommended distribution for the three types of grenadiers proposed is as follows:

(1) The rifle squad grenadiers, the platoon sergeant and weapons squad leader should retain eighteen (18) rounds on individual.

(2) The weapons squad grenadiers should have twenty-four (24) rounds on individual. The increase here comes from having taken six (6) rounds from the ammunition bearers armed with the M79.

(3) The machinegun ammunition bearers should have twelve (12) rounds on individual.

(The above breakdown of ammunition gives a total of 180 rounds of M79 ammunition located on individual in the rifle platoon with a back-up of 450 rounds located on unit transportation, and an additional 450 rounds in ammunition trains.)

e. M60 Machineguns: The present ammunition breakdown per gun carried by the MG crew is 800 rounds. The gunner carries two hundred (200) rounds, the assistant gunner carries three hundred (300) rounds and the ammunition bearer carries three hundred (300) rounds. This leaves 1,450 rounds per gun on unit transportation and 1,000 rounds per gun on ammunition trains. Because of the way the 7.62mm machinegun ammunition is packaged, with 100 rounds per bandoleer, it is recommended that the with-gun, per-gun 800 rounds remain the same; but that 1,450 rounds on unit transportation be cut to 1,400 rounds and that the 1,000 rounds on ammunition trains be the same per gun.

f. The approved number of LAWs per rifle company is 200. It is recommended that this amount remain the same.

g. The addition of a platoon vehicle will also aid in ammunition resupply, medical evacuation, and in feeding the platoon. It would relieve the platoon of sending carrying parties extreme distances to the rear which would reduce the effectiveness of the platoon.

24. THE SOLDIERS LOAD.

a. Basic Items of Clothing and Equipment

| <u>Item</u> | <u>Weight in Pounds</u> | |
|---|-------------------------|----------------|
| | <u>Squad</u> | <u>Platoon</u> |
| Boots | 2.00 | 2.00 |
| Bayonet Knife w/Scabbard | 1.25 | |
| Canteen, Cup & Cover (Full) | 3.29 | 3.29 |
| Belt, M14 w/1st Aid Packet & Pouch | .95 | .95 |
| Fatigues, Underwear & Belt | 2.68 | 2.68 |
| Gas Mask | 3.25 | |
| Grenades, Hand (2 ea) | 2.00 | |
| Helmet & Liner | 3.00 | 3.00 |
| Intrenching Tool | 3.00 | 3.00 |
| Pack Suspenders | .50 | .50 |
| Pack, Light Field (1/3 Rations & Toilet Articles, 1 Set Underwear, 1 Pair of Socks, Mess Equipment) | 3.00 | |
| Poncho or Field Jacket (ea) | 3.00 | |
| Rations 1/3, Toilet Articles (In Ammo Pouch) | | 2.15 |
| Ves., Armored | 8.00 | |
| Total Load of Basic Items | 35.92 | 17.57 |

b. Items to be issued on an "as needed" basis: (These items appear under the squad load in paragraph a but not under the platoon load).

| <u>Item</u> | <u>Weight in Pounds</u> |
|---|-------------------------|
| Bayonet, Knife w/Scabbard | 1.25 |
| Gas Mask | 3.25 |
| Grenades, Hand (2 ea) | 2.00 |
| Pack, Light Field, (1 Set Underwear, 1 Pair of Socks, Mess Equipment) | 1.00 |
| Poncho or Field Jacket (ea) | 3.00 |
| Vest, Armored | 8.00 |
| Total Weight Individual Equipment | 18.50 |

c. Items of platoon equipment not found in squad load that are to be placed on an "as needed" basis:

| <u>Item</u> | <u>Weight in Pounds</u> |
|---------------------------------------|-------------------------|
| TA-1/PT Telephone, 5 ea | 17.50 |
| Reel, Equipment CE-11 | 4.50 |
| Spool, DR-8 | 14.00 |
| LAW, M72 (ea) | 4.50 |
| Radiac Meter, IM108/PO | 3.50 |
| Total Weight Platoon Equipment | 44.00 |

d. Below are listed three loads as they pertain to type individual for the squad test, platoon test and the proposed organization:

| <u>Job Title & Item of Equipment</u> | <u>Squad</u> | <u>Platoon</u> | <u>Proposed</u> |
|--|--------------|----------------|-----------------|
| Platoon Leader: | | | |
| Basic Equipment Load | | 17.57 | 17.57 |
| Binoculars | | 2.10 | 2.10 |
| Compass | | .50 | .50 |
| Flashlight | | .50 | .50 |
| Grenade Launcher, M76 | | | .75 |
| Magazine, 7.62mm, M14, Loaded, 5 ea | | 5.35 | 5.35 |
| Pouch, Ammo 7.62mm, M14, 2 ea | | .18 | .18 |
| Rifle, 7.62mm, M14 | | 9.25 | 9.25 |
| Radio Set, AN/PRC-6 w/Battery | | 6.50 | 6.50 |
| Total | N/A | 41.95 | 42.70 |

| <u>Job Title & Item of Equipment</u> | <u>Squad</u> | <u>Platoon</u> | <u>Proposed</u> |
|--|--------------|----------------|-----------------|
| Platoon Sergeant: | | | |
| Basic Equipment Load | | 17.57 | 17.57 |
| Ammunition, 40mm, M79 | (9 ea) | 4.50 | (18 ea) 9.00 |
| Compass | | .50 | .50 |
| Flashlight | | .50 | .50 |
| Magazine, Pistol Cal .45 Loaded (3 ea) | | 1.44 | 1.44 |
| Pistol, Cal .45 w/Holster | | 2.78 | 2.78 |
| Pouch, Ammo, Cal .45 (1 ea) | | .09 | .09 |
| M79, 40mm | | 6.16 | 6.16 |
| Radio Set, AN/PRC-6 w/Battery | | 6.50 | 6.50 |
| Total | N/A | 40.04 | 44.54 |

| Job Title & Item of Equipment | Squad | Platoon | Proposed |
|---|-------|---------|----------|
| Radio Telephone Operator: | | | |
| Basic Equipment Load | | 17.57 | 17.57 |
| Magazine, Pistol Cal .45, Loaded (3 ea) | | 1.44 | 1.44 |
| Pistol, Cal .45 w/Holster | | 2.78 | 2.78 |
| Pouch, Ammo, Cal .45, (1 ea) | | .09 | .09 |
| Radiac meter, IM108/PO | | 3.50 | |
| Radio Set, AN/PRC-10 w/Battery | | 26.00 | 26.00 |
| Total | N/A | 51.38 | 47.88 |
| Messenger: | | | |
| Basic Equipment Load | | 17.57 | 17.57 |
| Grenade, Launcher, M76 | | | .75 |
| Magazine, 7.62mm, M14 Loaded (5 ea) | | 5.35 | 5.35 |
| Pouch, Ammo, 7.62mm, M14 (2 ea) | | .18 | .18 |
| Rifle, 7.62mm, M14 | | 9.25 | 9.25 |
| Total | N/A | 32.35 | 33.10 |
| Rifle Squad Leader: | | | |
| Basic Equipment Load | 35.92 | 17.57 | 17.57 |
| Compass | .50 | .50 | .50 |
| Flashlight | .50 | .50 | .50 |
| Grenade, Launcher, M76 | | | .75 |
| Magazine, 7.62mm, M14 Loaded (5 ea) | 5.35 | 5.35 | 5.35 |
| Pouch, Ammo, 7.62mm, M14 (2 ea) | .18 | .18 | .18 |
| Rifle, 7.62mm, M14 | 9.25 | 9.25 | 9.25 |
| Radio, AN/PRC-6, w/Battery | 6.50 | 6.50 | 6.50 |
| Telephone, TA-1/PT | 3.50 | 3.50 | |
| Total | 61.70 | 43.35 | 40.60 |
| Rifle Squad Sergeant: | | | |
| Basic Equipment Load | | | 17.57 |
| Grenade Launcher, M76 | | | .75 |
| Magazine, 7.62mm, M14, Loaded (5 ea) | | | 5.35 |
| Pouch, Ammo, 7.62mm, M14 (2 ea) | | | .18 |
| Rifle, 7.62mm, M14 | | | 9.25 |
| Total | N/A | N/A | 33.10 |
| Rifle Squad Corporal: | | | |
| Basic Equipment Load | | | 17.57 |
| Magazine, 7.62mm, M14, Loaded (5 ea) | | | 5.35 |
| Pouch, Ammo, 7.62mm, M14, (2 ea) | | | .18 |
| Rifle, 7.62mm, M14 | | | 9.25 |
| Total | N/A | N/A | 32.35 |
| Rifleman, M14: | | | |
| Basic Equipment Load | 35.92 | 17.57 | 17.57 |
| Magazine, 7.62mm, M14, Loaded (5 ea) | 5.35 | 5.35 | 5.35 |
| Pouch, Ammo, 7.62mm, M14, (2 ea) | .18 | .18 | .18 |
| Rifle, 7.62mm, M14 | 9.25 | 9.25 | 9.25 |
| Total | 50.70 | 32.35 | 32.35 |

| Job Title & Item of Equipment | Squad | Platoon | Proposed |
|--|-------------|--------------|--------------|
| Rifleman, M14, Modified: | | | |
| Basic Equipment Load | 35.92 | | |
| Magazine, 7.62mm, M14, Modified Loaded, (13 ea) | 13.96 | | |
| Rifle, 7.62mm, M14, Modified | 11.00 | | |
| Total | 60.88 | N/A | N/A |
| Grenadier (Rifle Squad): | | | |
| Basic Equipment Load | 35.92 | 17.57 | 17.57 |
| Ammunition, 40mm, M79 (12 ea) | 6.00 (9 ea) | 4.50 (18 ea) | 9.00 |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | 1.44 | 1.44 | 1.44 |
| M79, 40mm | 6.16 | 6.16 | 6.16 |
| Pouch, Ammo, Cal .45 (1 ea) | .09 | .09 | .09 |
| Pistol, Cal .45 w/Holster | 2.78 | 2.78 | 2.78 |
| Total | 52.39 | 32.54 | 37.04 |
| Asst Squad Ldr or Fire Team Ldr: | | | |
| | W/M79 | W/M14 | |
| Basic Equipment Load | 35.92 | 35.92 | 17.57 |
| Ammunition, 40mm, M79 (12 ea) | 6.00 | | |
| Magazine, 7.62mm, M14, Loaded (5 ea) | | 5.35 | 5.35 |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | 1.44 | | |
| M79, 40mm | 6.16 | | |
| Pouch, Ammo, 7.62mm, M14 (2 ea) | | .18 | .18 |
| Pouch, Ammo, Pistol, Cal .45 (1 ea) | .09 | | |
| Pistol, Cal .45 w/Holster | 2.78 | | |
| Rifle, 7.62mm, M14 | | 9.25 | 9.25 |
| Total | 52.39 | 50.70 | 32.35 |
| | | | N/A |
| Weapons Squad Leader: | | | |
| Basic Equipment Load | | 17.57 | 17.57 |
| Ammunition, M79, 40mm | | (9 ea) 4.50 | (18 ea) 9.00 |
| Compass | | .50 | .50 |
| Flashlight | | .50 | .50 |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | | 1.44 | 1.44 |
| M79, 40mm | | 6.16 | 6.16 |
| Pouch, Ammo, Cal .45 (1 ea) | | .09 | .09 |
| Pistol, Cal .45, w/Holster | | 2.78 | 2.78 |
| Radio Set, AN/PRC-6, w/Battery | | 6.50 | 6.50 |
| Telephone, TA-1/PT (Carried during 1st half of Plat Test only) | | 3.50 | |
| Total | N/A | 43.54 | 44.54 |

| Job Title & Item of Equipment | Squad | Platoon | Proposed |
|---|-------|---------|----------|
| M60 Machinegunner: (Weapons & Rifle Squad) | | | |
| Basic Equipment Load | 35.92 | 17.57 | 17.57 |
| Bandoleer, MG 7.62mm, M60, 100 rd (2 ea) | 14.00 | 14.00 | 14.00 |
| Machinegun, 7.62mm, M60 | 23.00 | 23.00 | 23.00 |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | 1.44 | 1.44 | 1.44 |
| Pouch, Ammo, Pistol, Cal .45 (1 ea) | .09 | .09 | .09 |
| Pistol, Cal .45 w/Holster | 2.78 | 2.78 | 2.73 |
| Total | 77.23 | 58.88 | 58.88 |

(NOTE: The figures in the proposed column refer only to the weapons squad, because no machinegun is proposed for the Rifle Squad.)

| | | | |
|--|-------|--------|-------|
| M60 Asst Machinegunner: (Weapons Squad) | W/M79 | WO/M79 | |
| Basic Equipment Load | 17.57 | 17.57 | 17.57 |
| Ammunition, M79, 40mm (9 ea) | 4.50 | | |
| Bandoleer, MG, 7.62mm, M60, 100 rd (3 ea) | 21.00 | 21.00 | 21.00 |
| M79, 40mm | 6.16 | | |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | 1.44 | 1.44 | 1.44 |
| Mount, M122 Tripod | 18.81 | 18.81 | 18.81 |
| Pouch, Ammo, Pistol, Cal .45 (1 ea) | .09 | .09 | .09 |
| Pistol, Cal .45, w/Holster | 2.78 | 2.78 | 2.78 |
| Total | N/A | 72.35 | 61.69 |

| | | | |
|--|-------------------------------------|--------------------------------------|-------|
| M60 Asst Machinegunner (Rifle Squad): | W/Spare Barrel Con- tainer | WO/Spare Barrel Con- tainer | |
| Basic Equipment Load | 35.92 | 17.57 | 17.57 |
| Bandoleer, MG, 7.62mm, M60, 100 rd (3 ea) | 21.00 | 21.00 | 21.00 |
| Container, spare barrel, MG, 7.62mm, M60, compl | 10.00 | | |
| Magazine, 7.62mm, M14, Loaded (5 ea) | 5.35 | 5.35 | 5.35 |
| Rifle, 7.62mm, M14 | 9.25 | 9.25 | 9.25 |
| Pouch, Ammo, 7.62mm, M14 (2 ea) | .18 | .18 | .18 |
| Total | 71.70 | 63.35 | 53.35 |

| | | | |
|--|-----|-------|-------|
| M60, Ammo Bearer (Weapon Squad): | | | |
| Basic Equipment Load | | 17.57 | 17.57 |
| Bandoleer, MG, 7.62mm, M60, 100 rd (3 ea) | | 21.00 | 21.00 |
| Magazine, 7.62mm, M14, Loaded (5 ea) | | 5.35 | |
| M79, 40mm | | | 6.16 |
| Ammunition, M79, 40mm (18 ea) | | | 9.00 |
| Pouch, Ammo, 7.62mm, M14 (2 ea) | | .18 | |
| Rifle, 7.62mm, M14 | | 9.25 | |
| Spare Barrel Container M60 | | 10.00 | 10.00 |
| Total | N/A | 63.35 | 63.73 |

| Job Title & Item of Equipment | Squad | Platoon | Proposed |
|--|--------|---------|--------------|
| Grenadier (Weapons Squad): | | | |
| Basic Equipment Load | | 17.57 | 17.57 |
| Ammunition, 40mm, M79 | (9 ea) | 4.50 | (18 ea) 9.00 |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | | 1.44 | 1.44 |
| M79, 40mm | | 6.16 | 6.16 |
| Pouch, Ammo, Cal .45 (1 ea) | | .09 | .09 |
| Pistol, Cal .45 w/Holster | | 2.78 | 2.78 |
| Total | N/A | 32.54 | 37.04 |
| M67, 90mm Recoilless Rifle Gunner: | | | |
| Basic Equipment Load | | 17.57 | |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | | 1.44 | |
| Pouch, Ammo, Pistol, Cal .45 (1 ea) | | .09 | |
| Pistol, Cal .45 w/Holster | | 2.78 | |
| Rifle, M67, 90mm, Recoilless | | 35.00 | |
| Total | N/A | 56.88 | N/A |
| M67, 90mm Recoilless Rifle Asst Gunner: | | | |
| Basic Equipment Load | | 17.57 | |
| Ammunition, Rifle, 90mm (3 ea) | | 27.75 | |
| Magazine, Pistol, Cal .45, Loaded (3 ea) | | 1.44 | |
| Packboard | | 4.00 | |
| Pouch, Ammo, Pistol, Cal .45 (1 ea) | | .09 | |
| Pistol, Cal .45 w/Holster | | 2.78 | |
| Total | N/A | 53.63 | N/A |
| M67, 90mm, Recoilless Rifle, Ammo Bearer: | | | |
| Basic Equipment Load | | 17.57 | |
| Ammunition, M67, 90mm RR (3 ea) | | 27.75 | |
| Magazine, 7.62mm, M14, Loaded (5 ea) | | 5.35 | |
| Packboard | | 4.00 | |
| Rifle, 7.62mm, M14 | | 9.25 | |
| Pouch, Ammo, 7.62mm, M14 (2 ea) | | .18 | |
| Total | N/A | 64.10 | N/A |

25. "AS NEEDED" EQUIPMENT, TOTAL WEIGHTS.

a. Equipment required by the rifle platoon to be issued on an "as needed" basis.

| Item | Weight | Plat Strength | Total Weight |
|--|------------|---------------|--------------|
| Armor Vest | 8.00 lbs x | 47 | = 376.00 lbs |
| Gas Mask | 3.25 lbs x | 47 | = 152.75 lbs |
| Poncho or Field Jacket | 3.00 lbs x | 47 | = 141.00 lbs |
| Bed Roll | 10.00 x | 47 | = 470.00 lbs |
| Pack, w/Underwear, Socks, Mess Gear | 1.00 lb x | 47 | = 47.00 lbs |
| | | Total | 1,186.75 lbs |

b. Miscellaneous:

| | <u>Weight</u> | | <u>Plat Strength</u> | | <u>Total Weight</u> |
|------------------------------|---------------|---|----------------------|---|---------------------|
| Bayonet, Knife w/Scabbard | 1.25 lbs | x | 47 | = | 58.75 lbs |
| Telephone, TA-1/PT | 3.50 lbs | x | 5 | = | 17.50 lbs |
| Reel Equipment, CE-11 (1 ea) | | | | | 4.50 lbs |
| Spool, Wire, DR-8 (1 ea) | | | | | 14.00 lbs |
| Radiac meter (1 ea) | | | | | 3.50 lbs |
| | | | | | <u>98.25 lbs</u> |

c. Munitions:

Hand Grenade - Add one (1) pound for each grenade.

LAW - Add four and one-half (4 1/2) pounds for each LAW.

d. Type Vehicle Carrying Capabilities:

| <u>Vehicle</u> | <u>Pounds</u> |
|---|---------------|
| M274, Mule | 1,000 |
| M151 (1/4-ton truck Utility, 4x4, w/Trailer) | 1,300 |

The total load is more than can be carried on either the M274 Mule or the 1/4-ton truck Utility with trailer.

SECTION V

SQUAD MOBILITY, FIREPOWER, MANEUVERABILITY AND STAYING POWER

26. During the conduct of the test, close observation was made of unit and individual mobility, maneuverability and firepower. These were evaluated with respect to certain objectives either implied or stated in the Plan of Test. Elsewhere in this report, some assessment is made of the results of the above observations and evaluations, but this is not true of "staying power." Different definitions of staying power were offered. It is intended that "staying power" be defined, then appropriate relationship of mobility, maneuverability and firepower will be considered complementary. It is believed that a valid explanation of "staying power" would materially support the overall test objectives of providing a "proper balance of weapons, personnel, equipment and tactics with the rifle squad."

27. First, to state the proposition simply, staying power is the built-in capability of a unit to sustain itself in combat. But, this definition is not complete. Ideally, organizational objectives intend that units be organized tactically and logistically to provide a reasonable sustaining capability in battle. A certain amount of "staying power" is derived from organization alone. This is caused by TOE factors, namely personnel and weapons authorized. These factors are inherent to the unit, always. Other inherent "influences" in determining staying power are: firepower capability, mobility (maneuverability), control, leadership, personnel motivation, fitness and subsistence, and flexibility. These influences are built-in because of the personnel available and the weapons assigned. However, is this the only measure of a unit's ability to sustain itself in combat? In addition to "inside" influences, there are "outside" influences connected to staying power. These include: combat and logistical support, geographical environment, terrain, and tactics used. When these "inside and outside" influences are combined, some impression can be made of a squad's (or platoon's) ability to sustain a mission appropriate to its organization and within its capabilities. Thus, "staying power is the ability of a unit to exploit its inherent (inside) capabilities as well as to derive sufficient benefit from "outside"

influences to determine optimum combat effectiveness. Staying power is measured in terms of the length of time a unit can remain combat effective despite battle attrition."

28. Now that an explanation of staying power has been advanced, it is necessary to define its subelements. In this regard, staying power will be discussed in terms of the inherent capabilities followed by a discussion of outside influences. These will be related to the USAIS Platoon where appropriate.

a. Inherent Capabilities:

(1) Firepower capability:

(a) The first item which contributes to staying powers is firepower capability. This may be the most important subject of all. At least, some academic appraisal can be made of it, rather than discussing it in vague, meaningless terms which are subject to argument. So, assessment will be made of the weapons organic to the squad (platoon) as to their real and/or potential capabilities. Comparisons will be made between the current TOE organizations and the proposed platoon. Those compared include the current TOE rifle platoon (with the old as well as the new equipment), and the ROAD platoon. Though this test objective is aimed at the squad, the discussion includes the platoon because the squad seldom operates independently. Firepower refers to both theoretical volume, and accuracy of fire that can be produced by a unit, and to the effective fire each unit actually produces. Theoretical volume depends entirely on the weapons organic to the unit. However, the firepower actually produced is a function of both the weapons training, and the ability of the firers. It might be presumed that the speed which fire can be delivered may depend upon the organization of the squad.

(b) One method of evaluating firepower is based on assigning numerical weights to the organic weapons of the platoon. All organic weapons in the squad (platoon) have been equated to the M1 rifle; using a figure of one (1) for this weapon and other multiples as appropriate. The chart (par 30) provides these numerical weights to each weapon. This is followed by a breakdown by squad (platoon) showing relative firepower between each organization. Then explanation is given as to why one weapon was rated numerically higher than another. It is not supposed that this method will satisfy entirely the above definition of firepower, but combined with target hit evaluation it will provide another means of "assessing" relative firepower of the squad and platoon.

(2) Mobility is an inherent capability in assessing unit staying power. It implies that the unit can move rapidly with its organic equipment under varying conditions of weather and terrain. As applied to the Infantry squad (platoon), mobility refers to the fact that equipment should be capable of being hand carried easily. The USAIS platoon meets this criterion primarily due to the close inspection which was given to resultant and recommendation of reduction of the Soldier's load.

(3) Manueverability (tied in with mobility and movement): This is merely the movement of a unit, while all or a part of it is under fire and returning fire. Increased flexibility of maneuver is shown by the addition of a third machinegun and M79 grenade launcher (fire support team) which permits the habitual tailoring of rifle squads to increase their capability for fire and maneuver.

(4) Control: This is defined as how well and how quickly the leader is able to communicate with and impose his will upon the members of his unit, so that they respond in a tactically appropriate and coordinated way. By creation of the two principal assistants to the squad leader, the squad can break into subelements (two or three) and still remain responsive to the desires of the leader. Platoon control is increased by the addition of the platoon radio operator

and messenger. By keeping the span of control at a reasonable figure, control is enhanced. Chain of command is provided by a natural progression from riflemen to squad corporal, sergeant, hence to squad leader. Ideally, if the chain of command works as intended (like a higher headquarters), then proper delegation of tasks will aid in the overall control of the unit.

(5) Leadership: A personal quality which may by virtue of it, sustain a unit beyond normal expectations, and because of a lack of it, may obviate the intrinsic value in the organization. Much of this at the squad (platoon) level is the result of experience, confidence, ability, and knowledge. Often a good leader can make a poorly organized unit function. It suffices to say, that any organization thrives on good leadership in order to gain the greatest potential from men and weapons.

(6) Personal motivation, fitness, and subsistence: This is dependent on many factors not the least of which is initiative, morale, and team spirit. An individual's morale has been defined as his confidence in himself, in his leader, and his group. The confidence and energy with which a unit goes about its tasks are undoubtedly related to the effectiveness with which the tasks are performed. Physical and mental fitness combined with individual resourcefulness and motivation contribute to staying power in varying degrees. These, plus leadership, give the impetus a "well balanced organization" needs to "hold the hill, or climb the hill in the first place." Subsistence items permit individuals the requisite food, water and warmth for an indefinite period. Some of these will be carried on each individual or supplied "as needed" in the USAIS platoon.

(7) Flexibility: This applies to organization. A flexible unit, like the USAIS Platoon, can function in a variety of combat missions or situations on varied terrain. Men in the organization have similar jobs, are cross-trained, permitting rotation of jobs. Weapons are simple to operate. The unit can change from one type of job to another without major modification. Staying power is increased by this flexibility. Battle attrition will not necessarily mean a complete collapse, though some combat effectiveness will be lost.

b. Outside Influences:

(1) Combat and logistic support: This is merely the sum total of combat power and logistical back-up normally in support of the forward elements. It means the timely response to forward unit needs in the form of delivery of fires, subsistence items, replacements and medical evacuation. Usually a large amount of support is provided in a tactical situation, but the unit anticipates some loss of support even to the point of total separation from supporting agencies.

(2) Geographical environment: Certain areas in the world contribute to the lowering of staying power unless adequate prevention is planned. The arctic, the jungle, the desert, and the mountains all contribute varying degrees of hardships which, unless prepared for, will quickly reduce combat effectiveness, and correspondingly, staying power. Conversely each of these areas can benefit operations if properly understood and adjusted to by training and acclimation to the surrounding environment. The lightness of the USAIS platoon lends itself to adaptability to these special areas and operations.

(3) Terrain and tactics: A requirement exists to organize the terrain with ingenuity and sound application of tactical doctrine. Thus, application of appropriate tactics tailored to meet the conformity of the terrain will increase a unit's staying power. Who can forget the historical example of the appropriately placed squad holding the defile, and, in so doing, causing the premature deployment and consequent delay of an enemy regiment.

29. The foregoing discussion has been aimed at assessing "staying power" and in no way suggests there are not other variables, other factors which may affect a unit's capability to sustain itself in combat. The combination of inherent capabilities and outside influences which affect a unit's ability to stay are directly proportional to the amount of casualties it can absorb and still be effective. This is a moot point and what is one unit's experience cannot suffice for another, unless all the ingredients of the "why" are revealed. Yet, in measuring a unit's staying power, much as it was accomplished herein, a reasonable prediction can be made. With built-in versatility, flexibility, adaptability, plus a relative firepower advantage over past organizations, the USAIS platoon is ideally suited to fight on the modern battlefield. This battlefield assumes occasional separation of small units as well as dispersion between larger elements. Squads will be asked to fight and live alone; here the greatest test will be in the unit's capability to meet the physical and emotional stress of short to long separation from higher headquarters. Thus, an infantry platoon operating on the future battlefield must expect to depend on built-in capabilities at some expense of outside assistance. Missions may require of a platoon what, in the past, a rifle company considered normal. The USAIS platoon stands ready to meet this challenge.

30. NUMERICAL FACTORS ON WEAPONS.

a. Rifle Squad (3)

M14 1.25
 *M14 (S) 1.5
 M14 (M) 1.75

M79 3.

*M14 w/selector and no bipod.

b. Weapons Squad (1)

M60 MG 2.5
 3.5" - RL 2.
 M67 RR 6.
 Pistol25

M79 3.

c. Miscellaneous

LAW 2.

31. RELATIVE FIREPOWER COMPARISON: RIFLE SQUADS

PRESENT 11 Man

Two M14 (M) 3.5
 Nine M14 11.25
 14.75

ROAD 10 Man

Two M79 6.
 Two M14 (M) 3.5
 Six M14 7.5
 17.0

USAIS 10 Man

Two M79 6.
 Eight M14 (S) 12.
 18.0

Weapons Squad

Two M60 5.
 Three P75
 Three M14 3.75
 One RL 2.
 11.50

Weapons Squad

Two M60 5.
 Four P 1.
 Two M67 12.
 Three M14 3.75
 21.75

Weapons Squad

Three M60 7.5
 Three M79 9.
 Three P75
 Three M79 9.
 One M79 3.
 29.25**

**(No LAW's shown)

32. TOTAL NUMERICAL SCORE FOR EACH PLATOON IS AS FOLLOWS:

- a. USAIS platoon 83.25
- b. ROAD platoon 72.75
- c. Present platoon 55.75

33. DISCUSSION:

a. Though the M14 (M) - with bipod, selector, and perforated hand guard - was dropped from further consideration after the squad phase, for the reasons indicated in Annex E, it was still rated marginally better than the standard M14. (However, it is agreed that the standard M14, firing semi-automatic fire, is more accurate than the M14 (M) rifle firing full automatic.)

b. The M79 was rated higher than the M14 or the M60 MG because of its versatility in firing accurately in the direct fire role as well as its indirect fire capability.

c. LAW's, though mentioned, were not added to the new organizations total firepower. Thus, efforts were made not to unnecessarily "pad" the newer organizations because of the advent of the M79 and the LAW, or the effectiveness of the M14 rifle when fired semi-automatically.

d. A distinct advantage was given to the ROAD organization by assessing the M67 90mm rifle with a figure of 6 per weapon. Though this weapon proved a burden during the tests and past tests revealed a series of discrepancies in accuracy, sight, and breech mechanisms, the weapon was objectively rated on its predicted potential of effectiveness at mid-range (300-360 M), accuracy, and lethality. There was no counterpart in the USAIS platoon as this organization has no organic antitank weapon. It relies, in the interim, on the LAW.

e. The weapons squad of the USAIS platoon possesses great firepower with three M60's, three grenadier gunners with the M79, and four more M79's available for use when needed. Additional firepower advantages are obtained by employment of a minimum of three (maximum of 14) M79's in the "mortar role."

SECTION VI

ROLE OF THE WEAPONS SQUAD

34. GENERAL:

a. The role of the weapons squad is to furnish close fire support and antitank protection for the rifle platoon.

b. The mission assigned this squad is two-fold: to provide close fire support, and antitank protection. Specific weapons are designated to accomplish each task, i.e., the M60 MG for close fire support and the 3.5" RL or the M67 RR for the antitank protection. It is recognized that an additional "out of role" weapons capability can be obtained, i.e., MG's firing in an (ineffective) antitank role and antitank weapons firing in a close fire support role against other than tank targets.

c. The introduction of the Light Assault Weapon (LAW) into the Rifle Platoon as an augmenting munition, thus providing an antitank capability throughout the entire organization, caused the antitank role of the weapons squad to be carefully reevaluated during the USAIS tests.

d. In both the ROAD and USAIS platoons, the weapons squad leader is responsible to the platoon leader for the tactical employment of his squad. One facet of proper employment of either MG's or antitank weapons is to ensure flexibility, i.e., weapons employed individually or in pairs either with the maneuver or supporting element of the rifle platoon.

e. The failure of the M67 90mm RR to perform effectively in the ROAD platoon was cause for its deletion from the USAIS organization (Annex F). In conjunction with this factor, the injection of the LAW more than compensates for the loss of the M67 antitank capability (360 meter effective range) in the weapons squad while at the same time transferring that role to the three (3) rifle squads. A detailed description of the USAIS weapons squad is as follows:

(1) The close fire support mission of the squad is accomplished through employment of the three (3) support teams (3 man M60 and 1 man M79 element) by:

(a) Retaining support teams under platoon control.

(b) The attachment of a team to one or more rifle squads.

(c) Various combinations of supporting elements as required or desired.

(2) When under platoon control, the support teams are positioned where they can best accomplish the mission.

(3) When necessary, the grenadiers of the support teams can be formed into a grenade section controlled by the senior grenadier. In the attack this section can continue to place supporting fire, within range, on an objective after other indirect fires have been lifted or shifted. When in the defense, the grenade section can be employed to cover the main avenue of approach, or supplement the indirect fires placed on the avenue.

(4) The three man machinegun element has the capability of placing effective automatic fire up to a range of 1100 meters. It can cover the dead space in grazing fire up to a range of 400 meters using the M79 grenade launcher carried by the ammunition bearer. The platoon's machineguns can be employed singularly or in pairs.

(5) When the entire support team is attached to the rifle squad, the rifle squad leader may employ the team as a whole or break the team into two (2) component parts. He is also able to form a grenade section by using the grenadier from the support team and his own two organic grenadiers.

(6) When the rifle squad is the point of the advance party, a support team will normally be attached.

(7) Should all support teams be attached to the rifle squads, the weapons squad leader is free to perform such duties as the platoon leader may direct, and in this regard, act in the role of "assistant platoon sergeant."

(8) By forming the weapons squad into three support teams, the platoon leader now can be extremely flexible in employing the squad. His platoon can now be organized for combat using the "brigade approach," by tailoring the rifle squads to suit the mission.

SECTION VII

SPAN OF CONTROL

35. The optimum span of control considerations for the rifle squad leader are the same as for any commander. Past studies have concluded that the optimum number of personnel should fall between two (2) and seven (7). Reference is made to the USAIS Platoon in this regard.

36. In the USAIS Platoon:

a. Any number of personnel between two (2) and seven (7) can be effectively controlled by the rifle squad leader through the judicious use of his two assistants: the squad sergeant and the squad corporal. The minimum limit of two (2) is arrived at when the squad leader controls his entire squad through his two assistants. Various combinations of squad organization could give the squad leader the maximum upper limit of seven (7) to control, although this is least desirable and seldom would be required.

b. The span of control for the weapons squad leader is a maximum of four. When the weapons squad is used as a whole unit, the squad leader controls through his three gun sergeants. Should the grenade section be formed, this section will be controlled by the senior grenadier. This then increases the span of control of the weapons squad leader to four. The support team organization negates the need for an assistant squad leader in the weapons squad.

c. The span of control for the platoon leader remains at five; the platoon sergeant, weapons squad leader, and the three rifle squad leaders.

37. A discussion of span of control would not be complete without mentioning the means used to obtain that control. At present, the rifle squad leader is limited to voice and hand-and-arm signals to control his squad. The rifle platoon leader uses the AN/PRC-6 radio net as the primary means to control his squad leaders and platoon sergeant. A wire net is available for particularly the defensive phase, and voice, hand-and-arm signals, and pyrotechnic devices are used when necessary. The AN/PRC-10 radio and wire are used to maintain contact with the company commander.

38. There is a serious need for better communication within the rifle platoon. The radio used in the platoon command net must be dependable, lightweight, and worn rather than carried. This will allow the leader complete freedom of movement in exercising control.

39. The rifle platoon leader must be able to maintain constant communication with the company commander as well as his squads. The platoon must be capable of 24 hour operation in sustained operations. To meet this requirement the most reliable means of communication--the messenger--must be introduced at platoon level. The messenger will assist the radiotelephone operator in operating the AN/PRC-10 in the company command net, installing and maintaining wire lines, firing pyrotechnic devices as needed, and performing as a runner when all other means of communication fail.

40. In the future there may be a need for an intra-squad radio. This requirement can be accomplished as follows:

a. Provide the assistant leaders of each squad with the same radio as the squad leader. These radios would be used as receivers only until there is a need to transmit. Only one platoon net is required.

b. Control would be maintained even though the squad leader should become a casualty.

41. The introduction of the helmet radio is a step toward obtaining an intra-squad radio net. The present helmet radio was tested in some of the candidate squad organizations. The radio was assigned to squad leader, assistant squad leaders, and fire team leaders. It was also used for communication between the platoon leader (Evaluator) and the squad leaders. The results of this limited test are as follows:

a. Advantages: The radio is worn rather than carried. The receiver is always positioned near the ear. It is more reliable and weighs less than the AN/PRC-6.

b. Disadvantages: The radio has a shorter range than the AN/PRC-6. There is a great tendency to depend entirely on the radio thus neglecting to use other control means. The battery life is unchanged and there is only one frequency available at one time. The helmet has no appreciable ballistic protective characteristics.

SECTION VIII

IS THERE A REQUIREMENT FOR ORGANIC AUTOMATIC FIRE IN THE RIFLE SQUAD?

42. Automatic fire must permit an average gunner assurance of target hits up to a minimum range of 200 meters. The M14 (M) rifle proved conclusively during the Squad Test that it could not meet this requirement. The weapon's high cyclic rate of fire negated reasonable accuracy beyond 50 meters when firing full automatic. This, combined with overheating and the difficulty of the gunner being able to hold the lightweight weapon stable during automatic firing, contributed to the release of this weapon from further consideration. The M14 rifle with selector does not meet this need either, but its semi-automatic fire at long ranges (200 M) has proved effective (See Incl 1). The machinegun provided long range accuracy but required more than one man to service the weapon. To gain best results in accuracy and stability, the machinegun required a tripod and a three-man crew.

43. The requirement for automatic fire also suggests determining how often it is needed in squad combat operations. If it were determined that a need exists for the squad to require automatic fire for all phases of combat, it follows that a suitable automatic weapon should be made organic to the squad. If this determination did not follow, then the automatic weapon could be made available for "those other required times" from another source. Since the M14 (M) was found unsuitable, the only other weapon available for consideration was the M60 MG.

44. The platoon phase revealed that, in squad independent or semi-independent operations, a machinegun team was normally attached. This was true whether or not an M60 MG was already organic to the squad. In other offensive type operations, MGs were required in the platoon. In the attack, machineguns were employed in both platoon test organizations in the supporting role. In the organization wherein machineguns were not organic to the rifle squad (Platoon A) they supported the attack from the vicinity of the LD. However, in the other organizations wherein machineguns were organic to the rifle squads (Platoon B) flexibility was attained by using them along the LD, emplacing them en route, and using them in the assault. There appeared to be no requirement for long-range accuracy of automatic fire within the squad during this phase. M14 rifles with selectors were used in the assault where short range accuracy, either semi-automatic or automatic was needed. Long-range accuracy was only necessary when the machineguns were used in the supporting role. MGs had to displace forward quickly in order to be responsive to the needs of the platoon during consolidation. The unit which had these machineguns organic in the rifle squads did not require the same degree of dependency and responsiveness.

45. In the defense, machineguns were made available to the rifle squads either in the attached or supporting role. Usually attachment was effected because of the required location of the machinegun within a squad area. Terrain and enemy threat dictated the best place for the

machinegun. Some combination of grazing and plunging fire was usually established. Often the machinegun could not effect ideal grazing fire across the front of the position. Generally, there did not appear to be a strong requirement for squad long range automatic fire. Rifle fire, either semi or full automatic, was considered effective since men held their fire until the enemy (or targets) were exposed relatively near the FEBA. This appeared to suffice in the defense. The increase in ammunition by virtue of the 20 round magazine, a sustained-fire capability (selector), plus fire discipline permitted the rifle squads to provide effective coverage of their areas out to 100 meters. Machineguns not only augmented rifle coverage and gave the platoon effective automatic fire at greater ranges, but also provided psychological advantages. These advantages were seen when the fire fight tended to slack off until the machinegun initiated the action again.

46. The very nature of retrograde operations indicates a general requirement for long range effective automatic fire. However, terrain did not often permit these long range fires. Units desire to engage attacking enemy at long ranges to cause their premature deployment. When the enemy is approximately 200 meters away, a requirement exists to place accurate effective fire on the attacking enemy. This permits disengagement before the forward forces are decisively engaged. The machineguns provide great shock action and long range accuracy to facilitate disengagement. Normally, the crew-served weapons provide the backbone of a withdrawal. Some machineguns remain in position and are prepared to fire regardless of whether a withdrawal is voluntary or involuntary. These fires are of course augmented by other supporting fires.

47. As stated above, another question can be raised. If the squad needs automatic fire some of the time in combat, should a suitable weapon providing this fire be organic or merely available from the weapons squad? Both theories were evaluated during the test. Some people prefer the light hard hitting squad equipped essentially with M14's; others see a need for more effective automatic fire as integral part of the squad - an improved BAR. Though target hit data was in favor of the M14 over the M60 machinegun, no one concluded that the Infantry could get along without the machinegun.

48. There follows an historical account to assess the automatic fire needs of the rifle squad

a. In the ORO report, "Infantry Operations and Weapons Usage in Korea, Winter 1950-1," S.L.A. Marshall states: "The average effective Infantry fire with weapons lighter than the machinegun was consistently less than 200 yards. In no instance was it established, in the operations brought under survey, that any significant move by enemy forces had been stopped (in the defense) and turned by rifle and carbine fire alone at ranges in excess of that figure . . . the equation alters radically as soon as automatic fire, either from the BAR or the LMG is added to rifle volume. The killing-stopping zone then lengthens anywhere from 200 to 400 yards, depending on the number of automatic weapons, the ability of the gunners, the governing terrain conditions, the weather, visibility and general situation. There is nothing unusual or unexpected about this; the one point which seems deserving of particular emphasis is the BAR greatly compounds the stopping effect of rifle fire at ranges considerably in excess of those at which unaided rifle fire is potent."

b. Marshall later stated in the same report that "effective use of all weapons is tied in with a strong belief in, and effective use of the rifle." He notes that men tend to gravitate to the BAR and build up fire around it. Based on the belief that two automatic rifles would stimulate stronger M1 fire, Marshall recommended that the Infantry squad be armed with two BAR's. This recommendation was presumably supported, for the United States Army did this in practice in later Korean campaigns, and the TOE reflects this figure today.

c. In fairness to objectivity, a conclusion that a requirement exists today for at least two automatic rifles per squad cannot be made based only on Korean experience. This was a war which terrain, weather and enemy tactics caused US forces to change techniques, tactics, and organizations to some degree.

49. The test has proven to satisfaction, however, that the M60 MG is not the answer to providing organic AW fire. Tests have also shown the great capability provided to the rifle squad by the advent of the M79 grenade launcher. The introduction of this weapon, and the anticipation of its next generation replacement, causes the entire question of squad organic AW fire to be reevaluated.

a. Provided sufficient MGs are available from the platoon and they are able to be assigned to the squad, at or before the time of need, there is serious doubt that AW fire weapons are required to be organic. At no time during the test was there a greater requirement for AW weapons for the platoon having the least number of MGs than were available from the weapons squad. Additionally, although supporting fires from higher headquarters were simulated in the test, the full effects of this type fire could hardly be appreciated. Nor could its relationship to the overall question be adequately appraised.

b. The question has been raised, if a more suitable weapon than the M14 (M) should be developed, could this weapon provide the squad with required automatic fire? It is the feeling of USAIS that if such a weapon appears in the arsenal, the question should be reevaluated in light of specific weapon capability. The weapon firing automatically does not alone provide sufficient reason to arbitrarily introduce it into the squad unless the entire spectrum of methods of employment, logistical factors, operator requirements, and relationship to other weapons and organization are integrated and analyzed. Specific factors would have to be evaluated.

50. CONCLUSIONS:

a. A need exists for automatic fire within the rifle squad when the squad operates independently or semi-independently.

b. That this need is satisfied by:

(1) The attachments of MGs from the weapons squad prior to the time of its expected use, provided sufficient weapons are available within the platoon.

(2) The increased capability of the M79 and its relationship to providing increased squad firepower.

(3) The ability of all riflemen to utilize the full automatic feature of the M14 rifle when required.

(4) The advantage given any squad by its nonorganic - but habitually furnished - supporting fire.

c. That neither the M14 (M) rifle or the M60 MG are the weapons to satisfy this need, for the reasons discussed in supplemental Annexes.

d. That if a better automatic weapon than the M14 (M) is developed, that weapon should be integrated into a specific squad unit and tested.

1 Incl

"Why Shoulder Weapon Automatic Fire?"

WHY SHOULDER WEAPON AUTOMATIC FIRE?

Colonel Henry E. Kelly, USA, Retired

Pressure has been exerted in recent years to equip every infantryman with a rifle capable of automatic fire. As a result, the M14 rifle, when equipped with a selector, can be fired automatically. With the M14 bipod attached, it is contemplated as a replacement for the Browning Automatic Rifle (BAR).

This drive for shoulder weapon automatic fire is ironic in the light of experience with the Browning Automatic Rifle (BAR) over the years. The BAR is capable of only one type of fire--automatic. As a consequence, the skilled BAR gunner when firing habitually "finger spaces" to achieve single shots or at most two-three round bursts. This technique is preferred in spite of the fact that the BAR weighing nearly 20 1/2 pounds when loaded has two selective cyclic rates of fire, both comparatively slow (the fast, 550 rounds per minute; the slow alternative, 350 rounds per minute). As a consequence, the BAR compared with most shoulder automatic weapons is relatively stable.

The firing weight of the fully loaded M14 rifle is about 10 1/2 pounds. Its cyclic rate of fire is a terrifically high 700-750 rounds per minute. As a consequence, it is impossible to obtain any degree of automatic fire accuracy in shoulder fire. Even with the added 1.7 pounds of the bipod and the consequent increased stability, its accuracy is marginal.

With this background in mind, objective examination of the combat advantages of automatic fire with a shoulder weapon seems warranted. The major advantage claimed for such fire is the obvious one of ability to deliver a heavy volume of fire within a brief period.

For a machinegun capable of effective sustained fire by reason of its ammunition supply system and tripod stability, this advantage realistically exists. But with the M14, ability to sustain fire is limited by a 20 round magazine, hence the time advantage gained is limited particularly in comparison to sacrifice required in accuracy. Assuming a close-up dense target, the most favorable type for automatic fire, a gunner could deliver 20 rounds semi-automatic fire in 20 seconds with good accuracy. In comparison, assuming use of the full cyclic rate, the M14 would be emptied in little more than a second. But it is more reasonable to assume fire in bursts of five or six rounds with pauses between bursts to achieve the approximate relay of the weapon necessitated by its tendency to climb rapidly. Assuming four bursts involving three relays, each of which requires two seconds, a total firing time of seven or eight seconds is required to empty a single magazine. Thus a saving of some twelve seconds would be achieved in firing against a close range dense target at the expense of major sacrifice of accuracy. Only if the enemy is within 15 to 25 meters and a single magazine considered adequate could the time thus saved be of importance.

Where additional magazines must be fired, the time required to reload another magazine is far more critical than is the time involved in firing 20 rounds automatic fire. Even a well trained gunner under favorable conditions requires three to four seconds to reload. This time increases rapidly under more unfavorable conditions as the gun heats up or when the firer is excited, exhausted or handicapped by extremes of weather. Use of automatic fire also increases both the chance of stoppages and the difficulty of reducing them.

The morale factor of automatic fire is often advanced as a reason for the need for automatic fire by the rifleman. Against inexperienced troops in their first encounters this noise might be a factor. If automatic fire proves ineffective, however, this advantage is soon lost. The relative contempt for "burp" gun fire which developed in WW II with realization of its ineffectiveness illustrates this. In any event, noise is a weak reed upon which to rely.

Exploratory tests conducted in 1959 to develop suitable firing positions which employed skilled, experienced marksmen firing in five round bursts from each of three combat positions (prone to standing) at a target six feet high and twelve feet wide developed that:

- a. At 50 yards, a few hits were achieved that no further firing was conducted beyond this range.
- b. At 25 yards, the final range used, firers could not place all five rounds of a burst consistently on the target.
- c. At 15 yards, the dimensions of the cone of fire could be contained upon the 6' X 12' target but no standard pattern could be developed.
- d. No accuracy differences were found between the kneeling, sitting, and prone positions.
- e. In the standing position, diagonal patterns predominated upward and to right for right-handed firers, upward and left for left-handed men.

Many tests over the years with several weapons have established that whether results are judged on a basis of time available or rounds expended automatic fire from a shoulder weapon is less effective than semi-automatic fire.

Thus the real advantage which any 20 round magazine rifle possesses over an 8 round clip rifle is the reduced amount of reloading required with resultant reduction in firer movement required in reloading. This important advantage far outweighs any gain inherent in automatic delivery of 20 rounds either in bursts or at the cyclic rate.

This discussion has assumed that ammunition would be available in combat to support automatic fire by all riflemen. Logisticians may disagree with this assumption and with good reason. For example, consider the problem of delivery of automatic fire during a 100 yard assault under current doctrine. This would require a minute plus a three second pause for each of some 50 bursts of three to four rounds or 150 to 200 rounds or up to 10 magazines. Reloading time would materially reduce the number of rounds fired provided the firers were able to reload while advancing, but in any case the load would be excessive and little ammunition would be available on the objective. Using semi-automatic fire, the ammunition requirement would be quartered.

It may be that this discussion has omitted consideration of some of the advantages claimed for automatic fire. If so, it would be interesting to learn what these concepts are and to test their validity. In the absence of such proof, little justification appears to exist for the automatic fire capability of a shoulder weapon such as the rifle.

ANNEX E

EVALUATION OF THE M14 RIFLE (MODIFIED)

1. Observations of the M14 rifle (modified) during the squad and platoon tests indicate the following.

2. Although the M14 (M) has a definite weight advantage over the BAR, numerous other unsatisfactory characteristics preclude its adoption. Tests revealed that the M14 (M) overheated after firing less than 100 rounds at the full automatic rate, to the degree that it was impossible for the firer to continue operating the weapon. During the squad live fire phase, the bolts of three out of eleven weapons disassembled while being fired at the full automatic rate and required weapons exchange or repair by ordnance personnel in the field. Other stoppages of the "bolt type" occurred in the blank firing exercises. An authoritative reason for this was never obtained; however, these were probably due to the blank ammunition and the blank firing attachments.

3. Automatic fire must permit an average gunner assurance of target hits up to a minimum range of 200 meters. The military requirement for accuracy for the BAR was to attain 80% hits in a 40-inch circle at a range of 200 meters firing in 2-3 round bursts. The M14 (M) proved conclusively during the Squad Test that it could not meet this requirement. Its cyclic rate of fire (700-750 rounds per minute) precluded the average gunner from attaining reasonable accuracy beyond 50 meters, when firing full automatic. This high cyclic rate, coupled with the instability of the M14 (M), caused many gunners to become "gun shy." This weapon was unpopular with the automatic rifleman. When attempting a "spot weld" with his hand, cheek and stock in an effort to obtain greater stability and accuracy, the rapid recoil caused annoying, forceful, and painful blows to his cheek bones. Proportionately, more "flinching" was done with this weapon than with any other.

4. The stability of the M14 (M) is marginal when fired from a prone position. The added weight of the bipod (1.7 pounds) is not sufficient to hold the weapon steady when firing full automatic. The barrel rises up and to the right or left, causing inaccurate fire. In situations where a quick firing response was necessary, it was observed that AR gunners would normally not use available supports (hinged butt plates and bipod). More often than not, the gunner would drop to the prone position and hold this weapon "off-hand", exactly as he would an ordinary M14 rifle. Although additional gunner training would reduce this fault, observers speculated as to whether or not the weapon is in fact too light.

5. When fired in the assault, the M14 (M) gunners used two positions, shoulder fire and hip fire. They experienced great difficulty in holding the weapon on the target, even to the point of endangering other squad members in the assault.

6. The present load bearing equipment is not suitable for carrying the magazines that an AR gunner is authorized. Because of this, the time lag in changing magazines in the assault was prohibitive. An increase in weapon capability could be provided by using expendable magazines.

7. Ammunition expenditure and target hits pertaining to the M14 (M) in comparison with the M14 and M60 MG is tabulated below.

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| a. <u>Ammunition</u> | <u>M14 (M)</u> | <u>M14</u> | <u>M60</u> |
|----------------------|----------------|------------|------------|
| Issued | 5,720 | 10,000 | 3,600 |
| Used | 2,816 | 4,164 | 1,898 |
| % Used | 49.2 | 41.6 | 52.5 |
| <u>Recorded Hits</u> | | | |
| Total Hits | 369 | 740 | 281 |
| % of Hits | 13.1 | 17.2 | 14.8 |

b. The above comparison depicts the following:

(1) The M14 (M) obtained a smaller percentage of hits than either of the other two weapons.

(2) It expended proportionately more ammunition than the M14, but 3.3% less than the M60.

(3) It obtained approximately 1/4 more total hits than the M60; but this was less than 1/2 of the total hits obtained by the M14.

8. CONCLUSIONS:

a. That the present M14 (M) rifle is not a suitable replacement for the BAR.

b. That if the full automatic rate of fire of the M14 (M) were reduced to 250-300 rounds per minute, the stability, accuracy and cooling capability of the weapon would probably be increased.

c. That when the need for squad automatic fire occurs, this need is not satisfied by the M14 (M) rifle. See Annex D, Sec VIII.

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ANNEX F

DISCUSSION OF THE M67 AND LAW

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SECTION I

DISCUSSION OF THE M67, 90MM RIFLE

1. TEST RESULTS:

a. This weapon was included in the Weapons Squads of both test platoons and was tactically evaluated during the blank firing phase of the test.

b. In consideration of the weight of the weapon (35 lbs) and its ammunition (approximately 10 lbs per round), a three-man crew was assigned to it. In this configuration the gunner, when carrying the loaded weapon, was shouldering 45 lbs of dead (unbalanced) weight. Each other member of the crew carried three rounds of ammunition (30 lbs) and a pack board. In so doing, the RR Crew could not keep pace with the remainder of the rifle platoon and severely restricted both the maneuver and movement of the unit.

c. The assignment of additional personnel to the RR Crew will not obviate the problem noted in par "b" above, for the awkwardness of the weapon precludes any solution other than its being carried on vehicular transport.

2. CONSIDERATION OF THE M67, 90MM RIFLE.

a. The above results of test do not eliminate further consideration of the M67 as a weapon. The question is: "Is there a requirement for it in the rifle platoon?" To answer this question, the weapon's predicted capabilities as well as other possible limitations must be evaluated.

b. The 90mm rifle meets, in general, the Tripartite objectives for penetration of enemy armor at extreme obliquities. This means it has a good possibility of penetrating the armor of the Russian medium and heavy tanks. The weapon has a rated capability (without spotter rifle) of a good chance of a first round hit at approximately 360 meters. With the proposed spotter rifle, the effective range can be increased, but with a corresponding increase in weight.

c. Moreover, it provides the rifle platoon with an accurate, relatively long-range anti-tank weapon. It is more accurate and lethal according to Ordnance statistics than the LAW at the same ranges, and has more effectiveness at greater ranges. Tactically, the weapon has these advantages and limitations:

(1) In the offense, the 90mm rifle can support the platoon from a vantage point on or near the LD (maximum weapon range is approximately 2000 meters). Normally, the weapon(s) displaces when fires are masked, or when it can no longer support the attack. Ideally, this displacement is tied in with maximum effective range (360 meters). In any event, the weapon has the capability to provide relatively long range fire support. Rate of fire as well as continuity of fire is applicable to both offense and defense. Based on ammunition availability, a well-trained crew can provide highly accurate fire indefinitely. This augments the antitank and fire support capability of the platoon. Defensively, it would provide the platoon a relatively long range capability against enemy armor and other hard (and soft) targets. It is conceivable that an effective 90mm rifle crew or crews can provide more timely and effective and sustained fire, than can a large quantity of LAW firers scattered on line and in depth.

(2) To insure objectivity, it is necessary to assess the weapon's limitations. In addition to weight, which restricts tactical mobility, the signature effects of the weapon cannot be overlooked. Recoilless weapons are known for these signature effects, i.e., back-blast, dust, smoke. These would necessitate constant movement or dictate the use of a fortified

and covered emplacement. The employment of many LAWs from different vantage points reveals a flexibility and versatility of employment not inherent to the 90mm rifle. Moreover, the introduction of other antitank means (106mm rifles, ENFAC, and attached tanks) assure, in those areas where they can be employed, long range antitank kill.

d. The question arises, do we need these capabilities at the expense of the limitations? The Evaluation Section believes that the Infantry cannot afford to live with the weapon in its present configuration in the rifle platoon--because of its weight and the acceptable substitute of the LAW.



Figure 12. M67, 90mm Rifle

3. CONCLUSIONS:

a. That the M67 90mm rifle is too heavy and awkward to carry and employ within the rifle platoon.

b. That the LAW, though not a panacea, reveals tremendous potential and capability to meet the present needs of the rifle platoon for engagement of enemy armor and other hard targets. See Sec II.

4. RECOMMENDATIONS:

a. That the M67 90mm rifle not be organic to the rifle platoon.

b. That considerations be advanced for establishing 90mm rifle squads as a part of an antitank section within the weapons platoon of the rifle company. This would be an interim solution.

c. That consideration be advanced for employment of the 90mm rifle as a substitute weapon for employment within the weapons platoon in those environments where larger anti-tank weapons cannot be employed. (This weapon could be carried as a part of the Platoon OVM without providing the additional crew; the 106mm crew would suffice.)

d. That research continue to pursue a long range objective of a lightweight antitank weapon under twenty-five (25) pounds, with a lethal range out beyond 500 meters for possible employment within the rifle platoon.

SECTION II

AFTER ACTION REPORT ON THE LAW

5. The Light Antitank Weapon (LAW) was evaluated in both the squad phase and platoon phase. During the squad phase, all squads were assigned inert LAWs, and the firing of this weapon was simulated. During the platoon phase, however, three live LAWs were fired. A description of the result of this firing follows:

a. During the defensive phase of the live fire platoon exercise, g or selection, training and firing took place on position. Three LAWs were distributed as follows: one to Platoon A and two to Platoon B. Individual gunners were selected at random from each of the two platoons. The selected gunners were directed to read and comply with the five-step diagram over-painted on the side of the tube, make a range estimation and fire on signal at a moving target tank.

b. All three gunners attained direct hits at ranges between 135 and 145 meters. It is significant to note that gunner training consisted of approximately 1 to 2 minutes of instruction.

~~TOP SECRET~~



Figure 13. Light Antitank Weapon (LAW)

ANNEX G

TENTATIVE CONCLUSIONS (SQUAD PHASE)

1. Each rifle squad should have two M79s, and they should be assigned to personnel other than the leaders (SL, FTL, or ASL).
2. The individual equipment load of the Soldier should be a maximum of 45 pounds.
3. Each M14 rifle should have the selector installed on the weapon, thus enabling the automatic fire capability to be utilized when needed. Authorization for use of this feature should be delegated to the company commander.
4. Assignment of the LAWs should be left to the discretion of company commander. The LAW should continue to be considered as an augmenting munition.
5. The rifle platoon should consist of three (3) rifle squads and one (1) weapons squad.
6. The Platoon Headquarters should consist of four (4) men; the Platoon Leader, Platoon Sergeant, R-T Operator, and Messenger.
7. There should be only one RR team in the weapons squad and it should consist of three men -- the gunner, the AG and AB.
8. To provide the weapons squad leader with the capability of marking targets and add an area type weapon to his squad, he should be armed with the M79.
9. The types of different weapons in the rifle platoon, in consideration of logistical implications, should be held to a minimum.
10. The M14 (M) rifle is an unsatisfactory replacement for the BAR.
11. The size of the rifle squad should be ten men, augmented to eleven if an APC is introduced into the squad. This same augmentation should also apply for the weapons squad.
12. The "assault line principle" as a maneuver to be used all the time must be carefully examined, and alternate methods should be devised.

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ANNEX H

STRENGTHS, WEAKNESSES AND CONSIDERATIONS (SQUAD PHASE)

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| SECTION II. Considerations in the Selection of the Optimum Rifle Squad | 61 |

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SECTION I

DISCUSSION OF ORGANIZATIONAL STRENGTHS AND WEAKNESSES

1. The organizational strengths and weaknesses of each candidate squad are listed below. See Figure 14

2. SQUAD 9A:

a. Strengths: Control of the squad was adequate due to the ratio of leaders to personnel. There were sufficient M14 rifles to satisfy the point fire requirement. The M79 grenade launcher was carried by a grenadier.

b. Weaknesses: The employment of this squad is complicated because of the mixture of the fire team and support team concepts. There is only one M79 grenade launcher which decreases the flexibility of the squad. There are five different weapons organic to the squad which increases logistical support required. One of these weapons, the M14 (M) rifle, proved to be an unsuitable weapon for the squad. One of the riflemen carried two assigned LAWs which hampered his movement. The full capabilities of the M60 machinegun were not exploited due to the two-man team.

3. SQUAD 9B:

a. Strengths: Control of this squad was excellent due to the ratio of leaders to personnel. There are only four different types of weapons organic to the squad. One LAW was assigned to each fire team and was carried by a rifleman. There are sufficient M14 rifles to satisfy the point fire requirement. The fire team concept can be properly employed by the squad.

b. Weaknesses: This squad lacks adequate firepower. By using the fire team concept the leaders are capable of controlling more personnel. Only one M79 grenade launcher is organic to the squad and it is carried by the squad leader.

4. SQUAD 10A:

a. Strengths: Control of this squad was adequate due to the ratio of leaders to personnel. The firepower capability is excellent and there are sufficient M14 rifles to satisfy the point fire requirement. There are only four different types of weapons organic to this squad. The squad is capable of employing the fire team concept.

b. Weaknesses: Only one M79 grenade launcher is organic to the squad and it is carried by the assistant squad leader. The M60 machinegun used in the AR role required more than one man to properly service the weapon. There was only one LAW assigned to the squad.

5. SQUAD 10B:

a. Strengths: Control of this squad was adequate due to the ratio of leaders to personnel. The squad could properly employ the support team concept. There are two M79 grenade launchers and four different types of weapons organic to the squad with sufficient M14 rifles to meet the point fire requirement. The firepower capability of this squad was considered adequate.

b. Weaknesses: The full capability of the M60 machinegun was not exploited due to the two-man team. The M79 grenade launchers were carried by the leaders.

6. ROAD SQUAD.

a. Strengths: Control of this squad was considered excellent due to the ratio of leaders to personnel. There were two M79 launchers organic to the squad and carried by grenadiers. The squad could adequately employ the fire team concept. One LAW was assigned to each fire team and carried by a rifleman. The firepower capability of this squad was considered adequate.

b. Weaknesses: The two M14 (M) rifles proved to be unsuitable weapons for the squad. The flexibility of the squad was somewhat limited by the built-in fire teams.

7. SQUAD 11A:

a. Strengths: Control of this squad was considered excellent due to the ratio of leaders to personnel. There were two M79 grenade launchers organic to the squad, carried by grenadiers. The firepower capability was excellent. There are only four different types of weapons with sufficient M14 rifles to satisfy the point fire requirements. This squad could effectively employ the fire team concept. One LAW was assigned to each fire team and carried by a rifleman.

b. Weaknesses: The two M60 machineguns required more than one man to properly service the weapon when in the AR role.

8. SQUAD 11B:

a. Strengths: This squad has the same advantages as Squad 11A with the exception of the assignment and number of M79 grenade launchers and the number of M14 rifles available.

b. Weaknesses: The four M14 (M) rifles proved to be unsuitable weapons for the squad. The three M79 grenade launchers were assigned to the leaders. There are insufficient rifles to satisfy the point fire requirement. See Sec II.

9. SQUAD 11C:

a. Strengths: Control of this squad was considered excellent due to the ratio of leaders to personnel. There were only two different types of weapons, all with a point fire capability, organic to the squad. The squad could properly employ the fire team concept and there was one LAW assigned to a rifleman in each fire team.

b. Weaknesses: There were no M79 grenade launchers organic to the squad. The squad was lacking in firepower and the two M14 (mod) rifles proved to be unsuitable weapons. The flexibility of the squad was somewhat limited by the built-in fire teams.

SECTION II

CONSIDERATIONS IN THE SELECTION OF OPTIMUM RIFLE SQUAD

10. The USAIS rifle squad has many built-in organizational strengths. Analysis of the organizational strengths and weaknesses of the tested candidate squads (See Annex H, Organizational Strengths and Weaknesses) revealed criteria which were considered in the development of the proposed rifle squads.

a. Control: There must be a satisfactory ratio of leader to personnel. (The squad leader and his two assistants provide this ratio. The span of control for the squad leader is within the proper limits.) See Annex D, Sec VII, "Span of Control"

b. Grenadiers: There should be at least two M79 grenade launchers per squad and the weapon should not be carried by the squad leader or his assistants. (The two grenadiers armed with the M79 grenade launcher meet this requirement.)

c. Point fire: There should be sufficient rifles to provide for point fire requirements. (There are eight M14 rifles organic to the squad to satisfy this requirement.)

(1) The evaluators interpreted "point fire requirement" to mean "that capability of a weapon or unit to efficiently produce sufficient accurate direct or indirect fire on point targets to destroy or neutralize same." This definition when applied to the rifle strength of the tested rifle squads indicates the below listed ratio.

(2) Ratio of rifle to personnel in rifle squads.

| <u>Squad</u> | <u>Ratio</u> | <u>%</u> |
|--------------|--------------|----------|
| USAIS | 8:10 | 80 |
| 10A & 10B | 7:10 | 70 |
| 9A & 9B | 6:9 | 66.6 |
| 11A & 11C | 7:11 | 63.6 |
| ROAD | 6:10 | 60 |
| 11B | 4:11 | 36.3 |

(3) By its very nature, the term "Rifle Squad" implies assignment of more rifles than any other type weapon. Traditionally, ideally, and logically, it follows that in the squad one should find the rifle in sufficient numbers for which the unit is named. Any ratio of rifles to total personnel of less than 50% is considered unsatisfactory.

d. Types of Weapons: The types of different weapons organic to the squad should be held to a minimum so as to decrease the logistical support required. (There are three weapons organic to the squad; the M14 rifle, M79 grenade launcher, and the pistol Cal .45. Only two types of ammunition will be required for resupply in large amounts; 7.62mm and 40mm).

e. Automatic fire: The squad should have the capability of providing automatic suppressive type fire in certain situations, i.e., jungle, street fighting, etc. (This requirement is satisfied by installing the selector on all M14 rifles.)

f. Tactical Employment: The squad must be able to employ both the support and the fire team concepts. (This requirement is met by allowing the squad leader to tailor his squad to fit the situation rather than organizing the squad into fixed fire teams.)

g. Firepower: There should be sufficient firepower organic to the squad. (The two M79 grenade launchers and eight M14 rifles employing 20 round clips and semi-automatic fire provide the squad the firepower necessary to accomplish its normal missions.) In addition, the selector option on the M14 rifles vastly increases firepower at short ranges.

ANNEX I

ORGANIZATIONAL CHARTS AND DATA

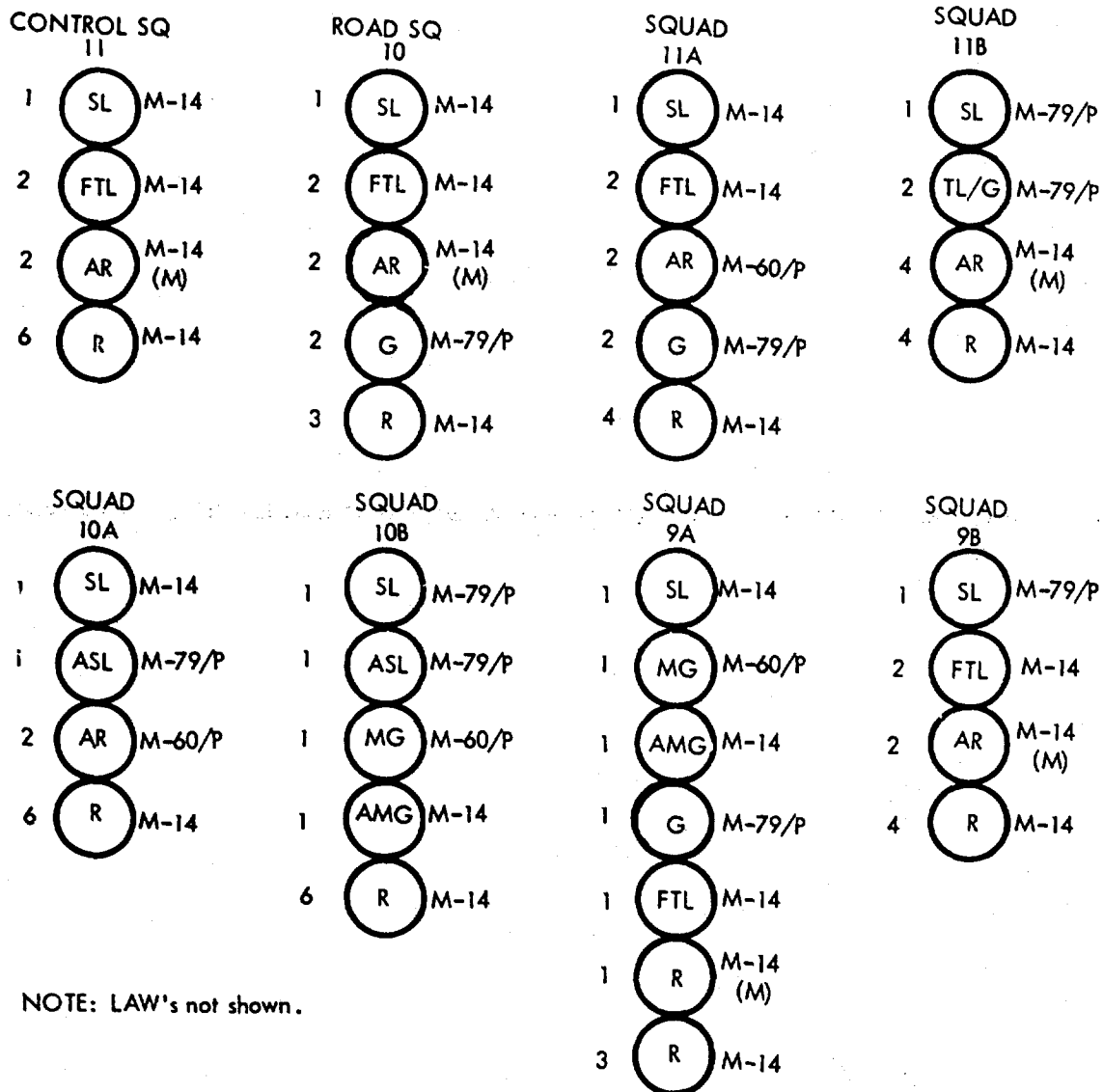


Figure 14. Test Squad Configurations.

1. **TEST SQUAD CONFIGURATIONS.** The above chart depicts the eight (8) rifle squads which were evaluated during the squad phase. The salient features of each are discussed below:

a. Squad 11C.

(1) This is the present 11-man squad. It contains two balanced fire teams of five men each. There are no M79s organic to this squad.

(2) This squad was used as a "yardstick" in comparing the other seven squads, while at the same time it was being evaluated on its own merit.

b. ROAD Squad. This configuration represents the 10-man dismounted rifle squad as it appears in the accepted draft, ROAD Tables of Organization. It is organized into two unbalanced fire teams of five and four men each. With the exception of one M14 rifle, each team contains the same weapons. No M60 MG is found organic to this squad; the M14 (M) rifle is employed in the AR role.

c. Squad 11A. This is essentially the present 11-man squad, organized into two identical five-man fire teams. Within each team, however, one M79 replaces an M14 rifle and the M14 (M) rifle is replaced by the M60. The M60 is used in the automatic rifle role as a one man operation.

d. Squad 11B. This squad is also organized into two identical fire teams. Fire team leaders (designated as FT/G) being armed with the M79, may be considered to be "leader-grenadiers." Each fire team has organic to it two M14 (M) rifles, both of which are employed in the AR role ~~(the last circle in the row should be "AR" and not "R")~~. This squad contains four M14 rifles and no M60 machineguns.

e. Squad 10A. This squad may be considered to be organized in two different ways. First, as a 10-man squad, containing the traditional squad leader-assistant squad leader arrangement, without employing fire teams; or as a variation of the fire team organization. The fire team concept can be considered to be one in which the squad is divided into two equal segments of five men each (one team led by the squad leader and the other by the assistant squad leader). In this instance, the leaders are armed with different weapons although the remaining team members are balanced in weapons. No M14 (M) rifles are organic to this squad; two M60s are used in the AR role. One M79 is made organic as the individual weapon of the assistant squad leader.

f. Squad 10B. This squad possesses the squad leader-assistant squad leader relationship. Both leaders are armed with the M79. This is an unbalanced squad, consisting of one two-man machinegun team (support element) and the remaining members are riflemen (maneuver element). This organization is unable to be employed as fire teams but must be employed in a "support-maneuver" concept only. No ARs (M14 (M) rifles) are organic to this unit.

g. Squad 9A. This organization contains one support team and one fire team as organic segments. The support team consists of a 2-man MG team and a grenadier. The fire team is commanded by a fire team leader.

h. Squad 9B. This squad organized into two identical four-man fire teams, balanced both in weapons and personnel. The squad leader is armed with the M79 and no M60 is introduced. Two M14 (M) rifles are introduced.

2. GENERAL.

a. M60 MGs are contained in the candidate organizations in both the AR and MG role.

b. M79s are interspersed in seven of the eight candidate organizations.

c. To assist in determining span of control for the squad leader and the validity of the fire team concept, the squad leader-fire team leader, and the squad leader-assistant squad leader relationship are depicted.

d. All squads are led by a squad leader, and except in squads 9B, 10B and 11B, he is armed with the M 14 rifle. Squads 9a and 10B introduce to the rifle squad an organic support team which is built around the M60 machinegun and a two-man crew.

e. Sufficient variations of rifle squad organizations, weapons numbers, roles and assignments, personnel arrangements and various leader relationships are contained in the eight configurations to adequately provide for organizational validity when all observations have been evaluated in relation to the test objectives.

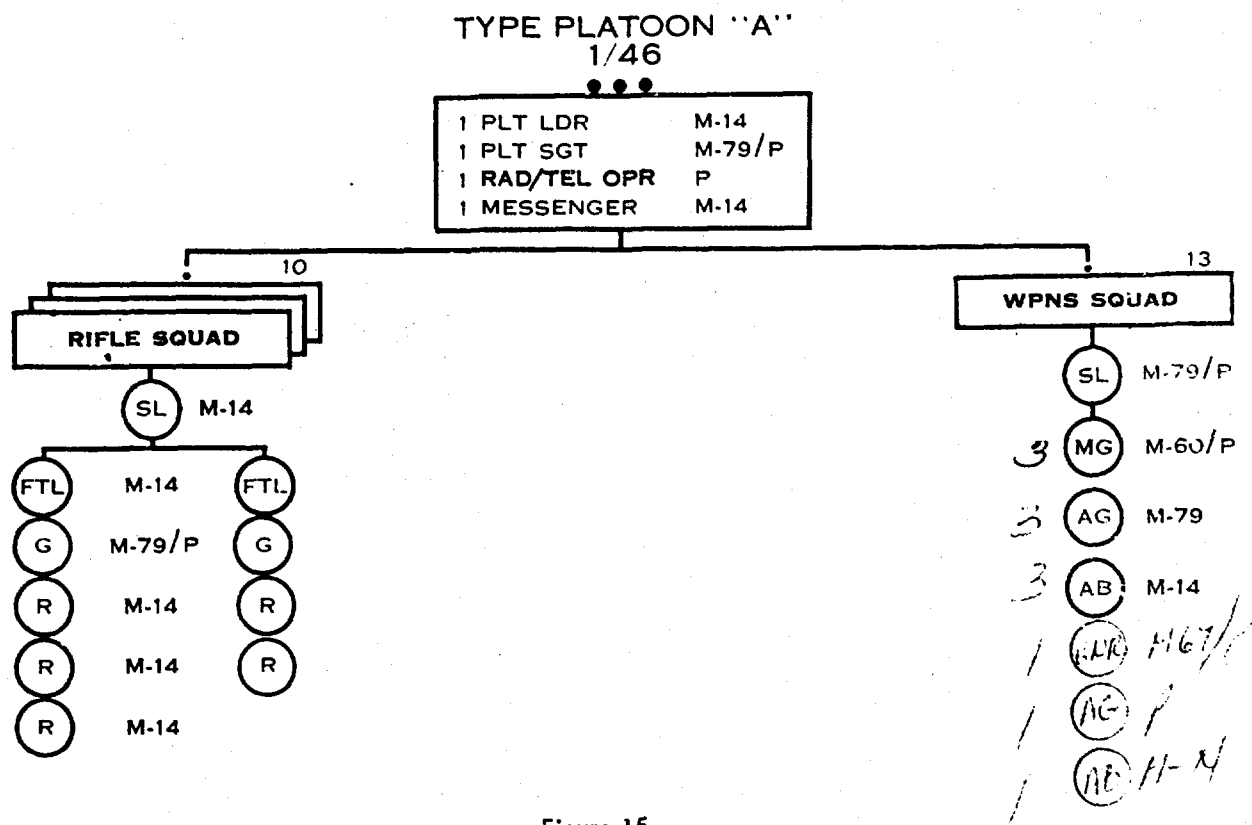


Figure 15.

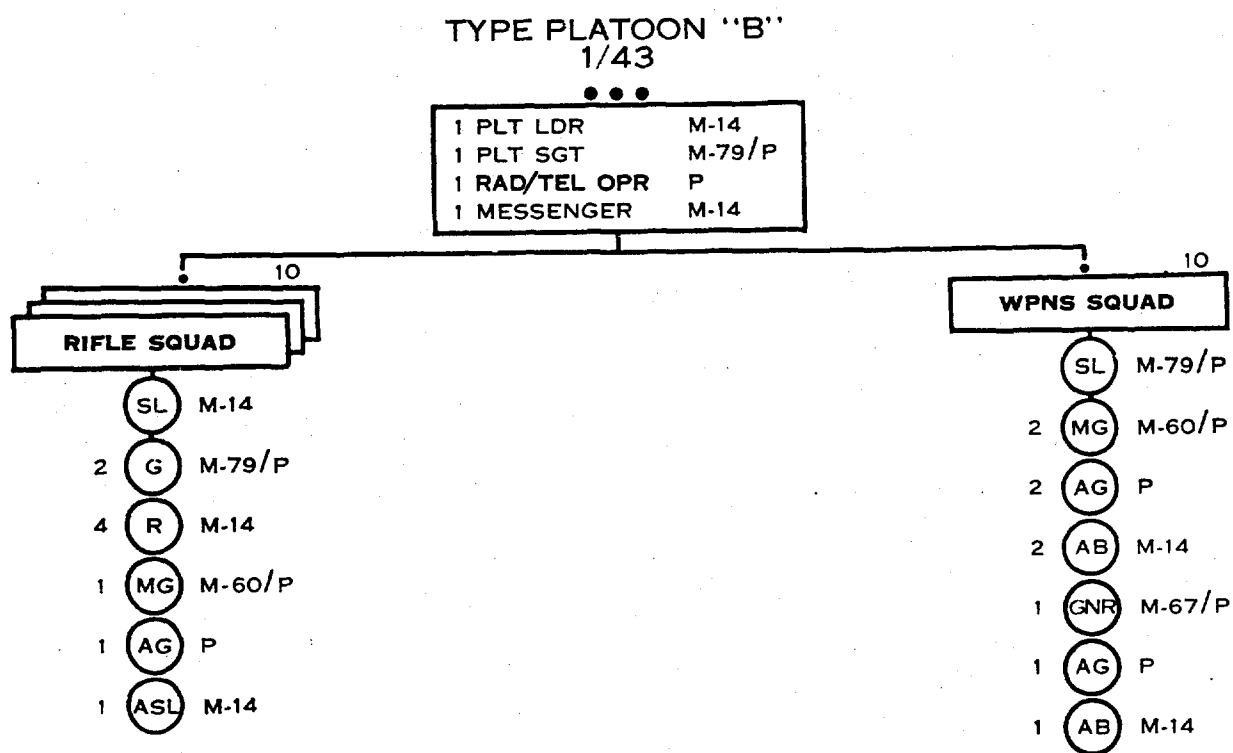


Figure 16.

RIFLE SQUAD AND PLATOON EVALUATION PROGRAM
22 May - 31 July 1961

TEST DIRECTOR

COLONEL BERNARD G. TEETERS
Ranger Department

DEPUTY TEST DIRECTOR

MAJOR AUSTIN J. YERKS, JR.
Ranger Department

CHIEF EVALUATOR

MAJOR JOSEPH J. ONDISHKO, JR.
The Student Brigade

OFFICER EVALUATORS

CAPTAIN DUEL F. BUNCH
Ground Mobility Department

CAPTAIN DONALD CARMICHAEL
Command and Staff Department

CAPTAIN JOHN W. JOHNSON
Weapons Department

CAPTAIN PHILLIP MERRICK
Airborne Department

ENLISTED EVALUATORS

Airborne Department

SERGEANT FIRST CLASS CHARLES F. KINSLEY
SERGEANT FIRST CLASS FRANCIS M. NORBURG
STAFF SERGEANT ROBERT D. ROBERTS

Command and Staff Department

MASTER SERGEANT WALTER SCOTT
STAFF SERGEANT RICHARD L. SPICER
SERGEANT PAUL H. JOHNSON
SERGEANT JAMES A. WIGGINS
SERGEANT RICHARD H. JONES

Communications Department

MASTER SERGEANT WILLIAM F. PEEL
MASTER SERGEANT ROBERT W. FREEMAN
SERGEANT FIRST CLASS WILLIAM D. WOODS

Ground Mobility Department

MASTER SERGEANT NEAL R. GENTRY
SERGEANT FIRST CLASS THOMAS G. JERNIGAN
SERGEANT FIRST CLASS CARDELL K. KANEY

Weapons Department

MASTER SERGEANT WINSTON S. KELLEY
SERGEANT FIRST CLASS CLAUDE WILSON
SERGEANT FIRST CLASS JAMES T. MAGNER
SERGEANT DONALD E. HEDGE